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14. ABSTRACT

Researchers conducted 3 web-administered job analysis questionnaires (JAQ's) among Army cannon crewmembers and fire support specialists (i.e., Army jobs, or MOSs, 13B and 13F). Two JAQs addressed MOS-specific tasks; the other common soldiering tasks. Tasks were ranked in categories of most frequently done, most important to job, most time consuming, uniform most often worn and perceived expectations to perform task. Tasks rated most important to job were often those reported as most frequently performed. Each task included a small to significant percentage of respondents reporting not having performed task in past 2 years. For both common and MOS-specific tasks, at least 32% of respondents reported not performing over half the tasks. Expectations and task performance were substantially related. 13F's reported performing MOS-specific tasks much more often during combat deployments than in garrison settings. More differences than similarities were found between the tasks job incumbents rated as important compared to subject matter experts. Also, Soldiers identified many tasks not previously addressed.

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USARIEM TECHNICAL REPORT T17-01

RESPONSES TO THREE USARIEM JOB ANALYSIS QUESTIONNAIRES (JAQ'S) CONDUCTED WITH CANNON CREWMEMBERS AND FIRE SUPPORT SPECIALISTS (MOS'S 13B & 13F)

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DISCLAIMERS

The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Army or the Department of Defense.

The investigators have adhered to the policies for protection of human subjects as prescribed in Army Regulation 70-25, and the research was conducted in adherence with the provisions of 32 CFR Part 219. Protocol # 9300.

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Portions of the data presented in this report have been previously reported.

Acronym List

AAR	after action report
ACE	Armored Combat Earthmover
AKV	Armored Knight Vehicle
ASP	ammunition supply point
BFV	Bradley Fighting Vehicle
BII	basic issue item
FAASV	Field Artillery Ammunition Supply Vehicle
FIST	Fire Support Team
FMTV	Family of Medium Tactical Vehicles
FO	Forward Observer
FS3	Fire Support Sensor System
GLPS	Gun Laying Positioning System
HE	high explosive
HMMWV	high mobility multipurpose wheeled vehicle
IET	Initial Entry Training
IZLID	Infrared Zoom Laser Illuminator Designator
JAQ	Job Analysis Questionnaire
LLDR	Lightweight Laser Designator Rangefinder
LMTV	Light Medium Tactical Vehicle
MOS	Military Occupational Specialty
MRAP	Mine-Resistant Ambush Protected
MTV	Medium Tactical Vehicle
TRAC	TRADOC Analysis Center
TRADOC	Training and Doctrine Command
USARIEM	U.S. Army Research Institute of Environmental Medicine

Executive Summary

As part of a larger study conducted with the U.S. Army Training and Doctrine Command (TRADOC) to develop physical performance standards for seven of the Army's most physically demanding jobs (i.e., military occupational specifications, or MOS's), researchers from the U.S. Army Research Institute of Environmental Medicine (USARIEM) designed and conducted a total of three web-administered job analysis questionnaires (JAQ's) among 13 series respondents. Two of these questionnaires were conducted with cannon crewmembers; the other was administered to fire support specialists (these occupations are classified as the 13B and 13F MOS's, respectively). The first JAQ addressed tasks that are generally performed not only by cannon crewmembers but by enlisted Soldiers in many Army MOS's (hereafter referred to as "common tasks"). This "Common Task JAQ" was made available to all 16,801 cannon crewmembers in the Army. A total of 448 responded, for a response rate of 2.6%. The second of these three questionniares, titled the 13B-Specific JAQ, addressed tasks that were **only** completed by Soldiers in the 13B MOS (i.e., no common tasks were included in this second JAQ). This second questionnaire was also sent to all 16,801 cannon crewmembers and a total of 413 responded, for a response rate of 2.5%. The third questionniare, the 13F-Specific JAQ, was sent to all fire support specialists in the Army and a total of 417 responded. However, the 13F support staff was unable to provide us with the total number of fire support specialists to whom this survey was sent. Thus, the response rate for the 13F-Specific JAQ could not be determined. Each of the MOS-specific JAQs (i.e., 13B- and 13F-Specific JAQ's) addressed tasks specific to their own MOS's (hereafter referred to as "job-specific tasks"). The 13F-Specific JAQ contained questions asking about both job-specific and common tasks. The respondents to each of the three JAQs indicated that they were willing to participate in completing the respective questionnaires as representatives of their branch. By applying an inclusion criterion that 50% or more of the survey items were required to be completed by each included participant, the numbers of respondents in the final datasets of the first, second and third questionnaires were reduced to 301, 346 and 281 respectively.

Of the 928 total respondents in the sample, nearly 100% (all but one) were male. Eighty-one percent were Caucasian, 14% were African-American, 3% were Asian, and 2% indicated being native or another type of Pacific Islander. Fifteen percent indicated that they were of Hispanic or Latino descent, a demographic item that was separate from the item addressing racial background. Thirteen percent of the sample were under 25 years of age, and 32% were 35 or older. Nearly the entire sample (92%) indicated that they had deployed to a foreign country, and over half (52%) said they had been deployed three times or more. Seventy percent had deployed to Afghanistan, and 76% had deployed to Iraq. Forty-eight percent of the combined sample reported they had served in both these theaters of operation.

Most Frequently Conducted, Important, and Time Consuming Tasks

In order to directly compare 13B-specific and common tasks and provide the most useful information to Army decision makers, data from both the 13B-specific and Common Task JAQs were combined for analysis. This may be considered an unorthodox procedure, because these two surveys were completed by two different sets of respondents and USARIEM researchers have no way of knowing how many respondents completed both surveys. Thus, analyses in this summary comparing 13B-specific tasks with common tasks should be considered with caution, and statistical differences between these two groups of tasks should be evaluated with less confidence than what would be typical.

Most Frequently Conducted Tasks

13B: Cannon Crewmembers. Of the 20 tasks addressed in the Task Ratings sections of the job-specific and common JAQ's for the 13B MOS (i.e., five 13B-specific and 15 common tasks), ANOVA's and post-hoc statistics indicated that five tasks were reported as being performed more frequently than others. These are i) performing a dismounted foot march or tactical movement, ii) using a shovel or entrenching tool to fill sandbags when preparing to build a fighting position, iii) lifting and carrying sandbags to an emplacement location and building a fighting position, iv) setting up a Gun Laying Position System (GLPS), and v) lifting a Wheel Arm Assembly to Emplace an M777 Howitzer.

13F: Fire Support Specialists. Of the 17 tasks addressed in the Task Ratings sections of the job-specific JAQ for the 13F MOS (this JAQ included each of the 15 common tasks), five were reported as being performed more frequently than others. These five tasks are i) performing a dismounted foot march or tactical movement, ii) establishing an observation point, iii) lifting and dragging a casualty to a safe location as quickly as possible, iv) using a shovel or entrenching tool to fill sandbags when preparing to build a fighting position, and v) lifting and dragging sandbags to an emplacement location and building a hasty fighting position.

Most Important Tasks to Job Success

13B. Of the same 20 tasks referred to in the 13B section above, six were reported to be the most important to success as an Army cannon crewmember. These six tasks are i) setting up a GLPS, ii) repairing broken tracks on a tracked vehicle such as a Paladin, iii) recovering a spade trail arm and blade to displace an M777 Howitzer, iv) lifting a wheel arm assembly to emplace an M777 Howitzer, v) lifting and carrying ammunition cans from the supply point to the back of a Bradley Fighting Vehicle (BFV), and vi) transferring ammunition with an M992 field artillery ammunition supply vehicle (FAASV; loading M795 high explosive or HE rounds).

13F. Of the same 17 tasks referred to in the 13F section above, six were reported to be the most important to success as an Army fire support specialist. These six tasks are i) establishing an observation point; ii) performing a dismounted foot march or tactical movement; iii) preparing an M1200 Armored Knight Vehicle (AKV) for operation; iv) while seated, removing and lifting/lowering the M242 feeder assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire procedures; v) with assistance from another Soldier, lifting, carrying and installing the barrel of a 25mm gun onto a BFV; and vi) with the assistance of another Soldier, pulling a casualty from a commander's seat and through the top hatch of a wheeled vehicle (i.e., BFV or Stryker).

Most Time Consuming Tasks

13B. Of the same 20 tasks addressed by the 13B's, seven were reported to take the most time to complete. These are i) performing a dismounted foot march or tactical movement; ii) repairing broken

tracks on a tracked vehicle such as a Paladin; iii) using a shovel or entrenching tool to fill sandbags when preparing to build a fighting position; iv) lifting and carrying sandbags to an emplacement location and building a fighting position; v) transferring ammunition with an M992 FAASV (loading M795 HE rounds); vi) jacking up a vehicle and removing the lug nuts from a flat tire; and vii) with the assistance of another Soldier, removing a spare tire from a high mobility multipurpose wheeled vehicle (HMMWV), rolling it into place, and lifting it onto the axle of the disabled vehicle.

13F. Of the same 17 tasks addressed by the 13F's, five were reported to take the most time to complete. These five tasks are i) performing a dismounted foot march or tactical movement, ii) establishing an observation point, iii) preparing an M1200 AKV for operation, iv) using a shovel or entrenching tool to fill sandbags when preparing to build a fighting position, and v) lifting and carrying sandbags to an emplacement location and building a fighting position.

The tasks rated as most important to job success are to a fairly large extent those reported as the most frequently performed. However, for both the cannon crewmembers and fire support specialists, certain tasks were indicated by the data as being more important but less frequently done. For cannon crewmembers, only one task fit this category: repairing broken tracks on tracked vehicles such as Paladins. For fire support specialists, these tasks were: i) preparing M1200 AKV for operation, ii) while seated, removing and lifting/lowering the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire procedures, and iii) with assistance from another Soldier, pulling a casualty from a commander's seat and through the top hatch of a wheeled vehicle (e.g., a BFV or Stryker). The data also highlighted one task for each of the two 13 Series MOS's that respondents reported were less important but more frequently done. For cannon crewmembers, this task was using a shovel or entrenching tool to fill sand bags when preparing a fighting position. For fire support specialists, this task was lifting and dragging a casualty to safety as quickly as possible.

Other Findings

Several other findings are also noteworthy and, depending on the extent of their validity, may have important ramifications for training programs. First, for each of the 22 tasks included in one of the three JAQs, a small to large percentage of the respondents reported not having performed that task in the last two years – not even in their Initial Entry Training (IET). The majority (i.e., nearly 55%) of the cannon crewmembers completing the Common Task JAQ reported performing only eight or fewer of the 15 tasks addressed by this survey during the last two years. Further, nearly a third (i.e., 33%) of the cannon crewmembers completing the 13B-Specific JAQ said they had performed two or less of five MOS-specific tasks addressed by this questionnaire within the same time period. Of the fire support specialists, 57% said they had done only 10 or fewer of the 17 common and job-specific tasks addressed by the 13F-Specific JAQ within the last two years. Second, expectations and the frequency of task performance were related. For each of both the common and job-specific tasks, those who said they were expected to perform the task when the situation arises were also likely to report completing the task more often in the last two years. (For one of the common tasks, this finding held true for cannon crewmembers but not for fire support specialists.) Third, fire support specialists appear to spend more time conducting job-specific tasks during combat deployments than in garrison settings (these results are mixed for cannon crewmembers). Fourth, a number of respondents who had deployed reported that they had performed MOS-specific tasks in the field but not in garrison. Fifth, there was considerable disagreement between subject matter experts and job incumbents concerning what aspects of these two jobs were highly important to job success.

Finally, based on comments made by respondents, it appears that within each of the 13B and 13F MOS's there are a number of physically demanding tasks currently being performed by Soldiers that were not addressed by the JAQ's used in this study. Among the sample of cannon crewmembers, these include i) transporting various types of howitzers and corresponding components, ii) ammunition, mounting/ dismounting and emplacing/displacing howitzers and corresponding components, iii) loading/ramming and firing rounds in howitzers to perform special missions, and iv) operating the hydraulic hand pump and

hand wheel to reposition the howitzer and/or hand tube. Among the fire support specialists, frequently mentioned physically demanding tasks not represented by the JAQ include i) carrying additional gear such as forward observer, radio telephone operator, and addition fire support team equipment; ii) performing rough ruck marches in full kit; iiii) conducting airborne and/or ranger operations; and iv) establishing, maintaining and operating radio and wire transmission/communication.

Introduction

As part of a larger study conducted with the U.S. Army TRADOC to develop physical performance standards for seven of the Army's most physically demanding jobs, researchers from the USARIEM and Human Performance Systems, Inc. designed three web-administered JAQ's to be completed by Army cannon crewmembers and fire support specialists (MOS's 13B and 13F, respectively). These questionnaires were administered on the Internet by the TRADOC Analysis Center (the point of contact for this mailing was Dr. Jennifer Jebo) over a four week period during the fall of 2014, after which time the questionnaire was closed and taken offline.

Method

The physically demanding tasks represented in the three JAQ's administered in this study were identified by a job analysis, which was guided by a scientific review panel and a senior personnel working group. These two groups oversaw the scientific process of the job analysis and the development of initial task lists, respectively. The process of developing these lists was intiated using the instructions in Department of the Army Pamphlet 611-21. The current physical demands and DA Form 5643 (The Physical Demands Analysis Worksheet) were used to initially define the essential tasks. The concept was to update the existing physical demands based on lessons learned from a decade of conflict. The experts examined the information in DA PAM 611-21, identified the tasks represented therein, determined if the list was current and complete, and created specific standards for each of the tasks. This was an iterative process with oversight provided by TRADOC and experienced senior leaders in the 13B and 13F MOS's.

Following this process determinations were made concerning whether adjustments to the physical demands of each task were needed. These decisions were based on data from the Center for Army Lessons Learned, after action reports (AAR's) from recently deployed brigade combat teams, and interviews with recently deployed battalion- and company-level leaders and Soldiers. These experts were asked to provide information concerning whether a task was critical, how often it was performed, and any additional quantifiable information. The lists of tasks and standards were then peer-reviewed by selected battalion commanders, command sergeants major, and non-commissioned officers in each MOS who were not affiliated with TRADOC. Each member of this branch peer review panel had been deployed, and many had been recently deployed. The final products were submitted to TRADOC by the senior personnel working group. These products were the task lists, the standards, and the supporting justification for changes (including DA Form 5643), with the changes noted. The final lists of tasks and standards from each proponent branch were approved by both the TRADOC Commanding General (GEN Robert W. Cone) and the Command Sergeant Major (CSM Daniel A. Daily). These lists were then forwarded to the Sergeant Major of the Army's Board of Directors for review and approval. Upon approval of the tasks and standards, they were verified in the field at the request of GEN Cone. The definition of verification used was that 90% of a randomly selected population of Soldiers in each MOS should be able to successfully complete the task to standard.

The resulting three JAQ's administered to cannon crewmembers and fire support specialists in this study were designed to collect information concerning a variety of job-specific (i.e., performed only by either cannon crewmembers or fire support specialists) and non-job specific (i.e., regularly performed by Soldiers in other MOS's) tasks of the 13B and 13F MOS's. These questionnaires were administered over the internet and responded to anonymously. No attempt was made to identify individual respondents. The first of these three JAQ's (i.e., the "Common Task JAQ") addressed 15 tasks (hereafter referred to as "common tasks;" see Table 1) performed by Soldiers in several MOS's including both 13B and 13F. The Common Task JAQ was completed by Soldiers in several MOS's, but only 13B data for the Common Task Survey are presented here for purposes of this report. Common Task JAQ data from Soldiers in

other MOS's will be presented in other reports being prepared for TRADOC. The second JAQ (i.e., the "13B-Specific JAQ") addressed five job-related tasks specific to the 13B MOS (hereafter referred to as "13B-specific tasks;" see Table 2). Finally, the third JAQ (i.e., the"13F-Specific JAQ") included all 15 of the common tasks along with another two tasks that were specific to the 13F MOS (hereafter referred to as "13F-specific tasks;" see Table 2). All three JAQ's were divided into three major sections: 1) Demographic information (e.g., age, race, deployment history); 2) Individual tasks, asking for (a) the frequency with which the respondent performed each task, (b) the importance of each to job success, (c) the time needed to complete each task, (d) whether the respondent was actually expected to perform each task when the situation required it, and (e) what uniform was typically worn while completing each task; and 3) "Supplemental Information" to obtain a fuller picture of some of the tasks addressed in the previous section.

A total of 448 of the 16,801 cannon crewmembers who were willing to participate as representatives of their branch provided data for the Common Task JAQ, for a response rate of 2.6%. A total of 413 of the 16,801 willing cannon crewmembers – a response rate of 2.5% - provided data for the 13B-Specific JAQ, and a total 417 willing fire support specialists of all the 13F Soldiers in the Army provided data for the 13F-Specific JAQ. Because the 13F support staff was unable to provide the total number of fire support specialists to whom the 13F-Specific JAQ was sent, the response rate for this questionnaire could not be determined. Among the respondents to the 13B-Specific JAQ there may be some who also responded to the Common Task JAQ; the researchers had no way of knowing how many cannon crewmembers responded to both these surveys. By applying an inclusion criterion that 50% or more of the survey items were required to be completed by each included participant (excluding questions asking for some type of demographic data such as gender or ethnic group), the numbers of respondents in the final datasets were reduced to 301, 346 and 281 for the Common Task JAQ, 13B-Specific JAQ, and 13F-Specific JAQ respectively.

Table 1. JAQ common tasks

1) Lift and drag a casualty to a safe location as quickly as possible
2) With assistance from another Soldier, lift, carry, and install the barrel of a 25mm gun onto a BFV
3) Lift and carry ammunition cans from the supply point (e.g., ammunition center or truck) to the back of a BFV
4) Throw a hand grenade
5) Use a shovel or entrenching tool to fill sand bags when preparing to build a fighting position
6) Lift and carry sandbags to an emplacement location and build a fighting position
7) With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle (i.e., BFV or Stryker)
8) Climb over, through, or around barbed wire obstacles
9) With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle
10) Jack up a vehicle and remove lug nuts from a flat tire
11) With the assistance of another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle
12) Manually tighten the lug nuts on a tire with a lug or torque wrench
13) As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle
14) Perform a dismounted foot march or tactical movement
15) While seated, remove and lift/lower the M242 Feeder assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire procedures

Table 2. JAQ tasks for the cannon crewmember (13B) and fire support specialist (13F) MOS's

13B-Specific Tasks

1) Transfer ammunition with an M992 FAASV (loading M795 HE rounds)
2) Lift wheel arm assembly to emplace M777 Howitzer
3) Recover spade trail arm and blade to displace an M777 Howitzer
4) Set up a GLPS
5) Repair broken tracks on a tracked vehicle such as a Paladin

13F-Specific Tasks

1) Establish an observation point
2) Prepare an M1200 AKV for operation

Analysis

The analysis plan for this study was to use the simplest and most straightforward analyses available that would provide decision makers with helpful information. A central tenet of this plan was to display all the data rather than selected subportions of it. So for example, when highlighting a particular feature of any set of variables (e.g., those tasks rated as most frequently performed or most important to job success), the ratings (e.g., frequencies or importance ratings) are provided for all the variables in that set along with specifying the particular highlighted rankings or features. Also, it is important to point out that two JAQ databases in this study, in addition to being analyzed separately, were combined for some analyses. One of these databases represented responses pertaining to common tasks; the other contained responses pertaining to 13B-specific tasks. These two databases were combined for some analyses despite the fact that researchers conducting this study did not know how many of these crewmembers completed both the common and 13B-Specific JAQ's (i.e., how much subject "overlap" exists in the two datasets). This would not be a generally recommended procedure, but the decision was made to combine these datasets to enable decision makers to directly compare all the common and MOS-specific tasks performed by cannon crewmembers. Any subject completing both surveys would **not** have provided duplicate task information, since no task was represented on both of these surveys.

Frequency analysis was used to obtain descriptive information, and chi-square tests and phi-coefficients, t-tests, Mann-Whitney U tests, and analyses of variance (i.e., ANOVA's) with accompanying Duncan post-hoc tests were used for group comparisons. Mann-Whitney U tests were used specifically when one or more distributions of variables being compared were highly aberrant (i.e., deviated to a large extent from normal) or when this type of test was more suitable based on the item response categories.

Results

Section 1: Background Information (i.e., Demographics)

Demographic data for the samples completing the Common Task and 13B-Specific JAQ's (i.e., the 301 and 346 cannon crewmembers, respectively, who responded to the surveys addressing 15 common and five 13B-specific tasks) are displayed in Table 3. Demographic data for the sample completing the 13F-Specific JAQ (i.e., the 281 fire support specialists) are shown in Table 4. Considering the combined sample from all three surveys, nearly 100% (all but one) were male. Eighty-one percent were Caucasian, 14% were African-American, 3% were Asian, and 2% indicated being native or another type of Pacific Islander. Fifteen percent indicated that they were of Hispanic or Latino ethnicity. Thirteen percent were under 25 years of age, and 32% were 35 or older. Nearly the entire sample (92%) indicated that they had deployed to a foreign country, and over half (52%) said they had been deployed three times or more. Seventy percent had deployed to Afghanistan, and 76% had deployed to Iraq. Forty-eight percent of the combined sample reported they had served in both these theaters of operation.

Table 3. Demographic data for the samples completing the 13B common task and job-specific JAQ's

Variable		**Common Task JAQ Sample[1]**		**13B-Specific JAQ Sample[1]**
Gender				
Male	n=300	300 (100%)	n=344	343 (99.7%)
Female		----------		1 (0.3%)
Ethnic Background				
Hispanic or Latino	n=262	40 (15.3%)	n=315	53 (16.8%)
Not Hispanic or Latino		222 (84.7 %)		262 (83.2 %)
Race				
Caucasian	n=256	200 (78.1%)	n=294	232 (78.9%)
African American		42 (16.4%)		48 (16.3%)
Asian (Chinese, Philippino, Japanese, Korean, etc.)		11 (4.3%)		8 (2.7%)
Native Hawaiian or other Pacific Islander		3 (1.2%)		6 (2.0%)

[1] Percentages for some of the demographic variables do not sum exactly to 100% due to rounding.

Table 3. Continued

Variable		Common Task JAQ Sample[1]		13B-Specific JAQ Sample[1]
Age				
Under 25	n=249	32 (12.9%)	n=345	41 (11.9%)
25 to 30		77 (30.9%)		108 (31.3%)
31 to 40		120 (48.2%)		158 (45.8%)
Over 40		20 (8.0%)		38 (11.0%)
Rank				
E2 & E3	n=300	8 (2.7%)	n=345	8 (2.3%)
E4		25 (8.3%)		29 (8.4%)
E5		77 (25.7%)		91 (26.4%)
E6		98 (32.7%)		116 (33.6%)
E7		92 (30.7%)		101 (29.3%)
Tenure in the Army				
Less than 18 months	n=300	1 (0.3%)	n=344	5 (1.5%)
18 months to 3 years		31 (10.3%)		26 (7.6%)
4 to 6 years		51 (17.0%)		75 (21.8%)
7 to 10 years		80 (26.7%)		91 (26.5%)
11 or more years		137 (45.7%)		147 (42.7%)
Times Deployed Since 11 SEP 2001				
Zero	n=300	22 (7.3%)	n=346	23 (6.6%)
One		52 (17.3%)		65 (18.8%)
Two		70 (23.3%)		92 (26.6%)
Three		89 (29.7%)		84 (24.3%)
Four to Six		66 (22.0%)		82 (23.7%)
More Than Six		1 (0.3%)		----------
Tenure in current MOS				
Less than 18 months			n=345	7 (2.0%)
18 months to 3 years				27 (7.8%)
4 to 6 years				82 (23.8%)
7 to 10 years				89 (25.8%)
11 or more years				140 (40.6%)
Component				
Active Army	n=301	295 (98.0%)	n=345	338 (98.0%)
Army National Guard		6 (2.0%)		6 (1.7%)
Army Reserve		----------		1 (0.3%)

[1] Percentages for some of the demographic variables do not sum exactly to 100% due to rounding.

Table 4. Demographic data for the sample completing the 13F-Specific JAQ

Variable		13F JAQ Sample[1]
Gender		
Male	n=281	281 (100%)
Female		----------
Ethnic Background		
Hispanic or Latino	n=247	29 (11.7%)
Not Hispanic or Latino		218 (88.3 %)
Race		
Caucasian	n=238	208 (87.4%)
African American		23 (9.7%)
Asian (Chinese, Philippino, Japanese, Korean, etc.)		4 (1.7%)
Native Hawaiian or other Pacific Islander		3 (1.3%)
Age		
Under 25	n=232	37 (15.9%)
25 to 30		67 (28.9%)
31 to 40		109 (47.0%)
Over 40		19 (8.2%)
Rank		
E2 & E3	n=279	14 (5.0%)
E4		18 (6.5%)
E5		59 (21.1%)
E6		91 (32.6%)
E7		97 (34.8%)
Tenure in the Army		
Less than 18 months	n=280	11 (3.9%)
18 months to 3 years		24 (8.6%)
4 to 6 years		49 (17.5%)
7 to 10 years		75 (26.8%)
11 or more years		121 (43.2%)
Times Deployed Since 11 SEP 2001		
Zero	n=281	26 (9.3%)
One		36 (12.8%)
Two		59 (21.0%)
Three		56 (19.9%)
Four to Six		96 (34.2%)
More Than Six		8 (2.8%)

[1] Percentages for some of the demographic variables do not sum exactly to 100% due to rounding.

Table 4. Continued		
Variable		**13F JAQ Sample[1]**
Component Active Army Army National Guard	n=277	 272 (98.2%) 5 (1.8%)

[1] Percentages for some of the demographic variables do not sum exactly to 100% due to rounding.

Section 2: Common Task Ratings

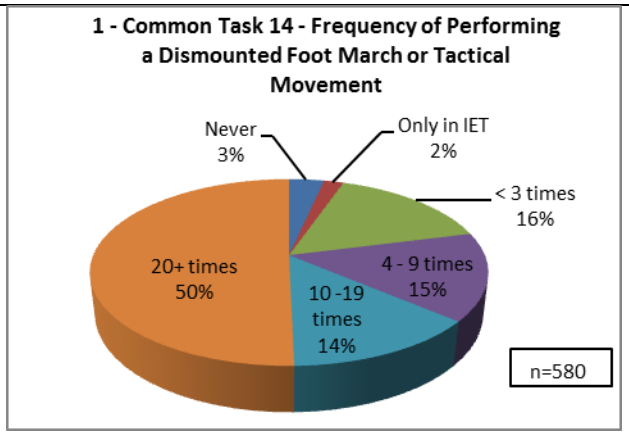
In the following pages, the results are summarized in terms of

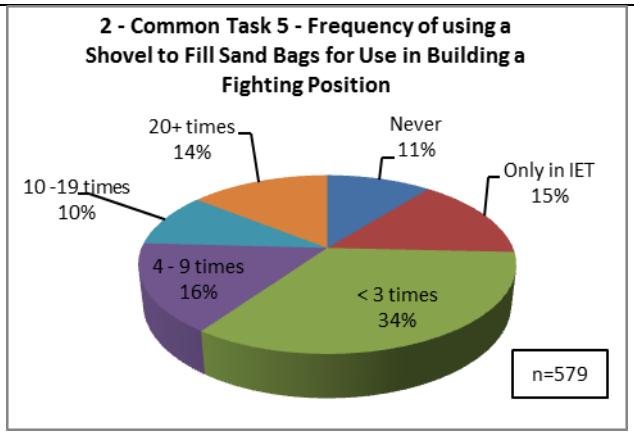
- how often each common task was performed in the last two years,
- extent to which each task in the Common Task JAQ was expected to be performed,
- rated importance of each common task,
- rated time each common task takes to perform, and
- uniforms worn for each common task.

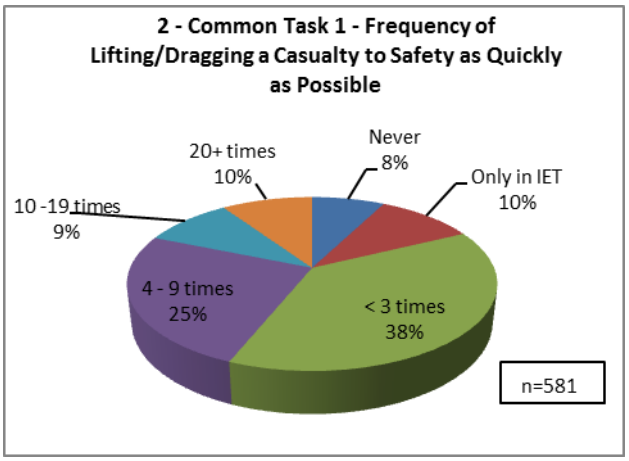
2.1. How Often Each Common Task Was Performed by Soldiers in Both the 13B & 13F MOS's in the Last Two Years

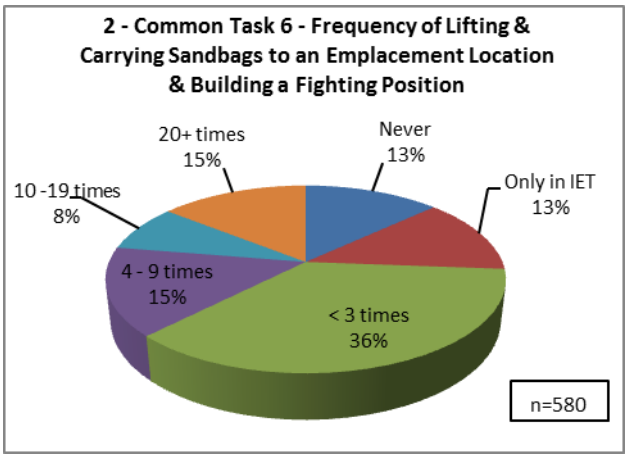
Tasks are ranked in order of descending reported frequency in the graphs below. Tasks with the same ranking numbers (i.e., with the same number on the far left in the chart title) do not differ statistically from each other. So for example, in Figure 1, both the tasks numbered "2" were reported to have been performed at about the same rate of frequency. For all the item frequency comparison analyses in this report, the response option "I have only performed this task during Initial Entry Training" was removed so that the response options reflect an ordinal continuum. This response option, however, is displayed in the graphs included in Figure 1.

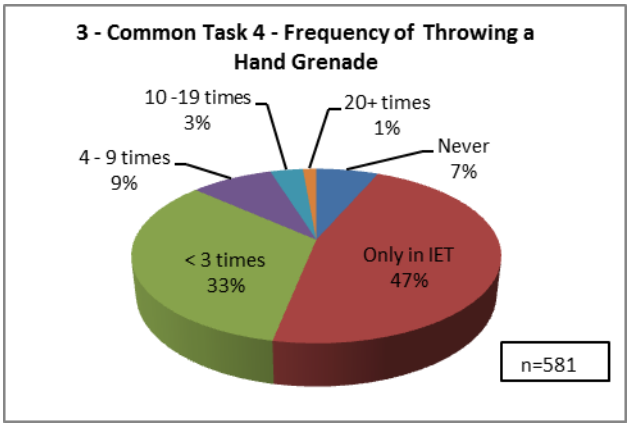
Figure 1. Frequencies with which common tasks were performed in the last two years

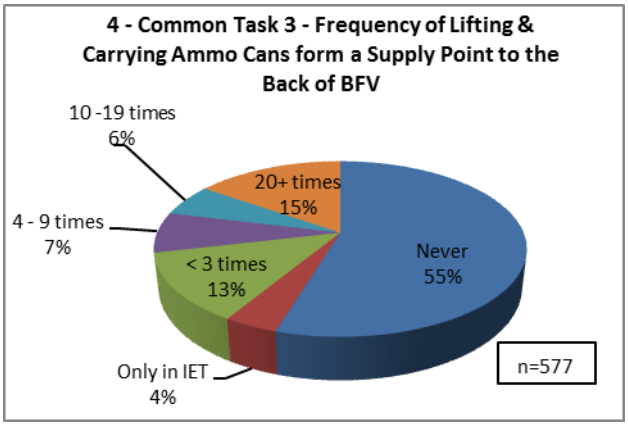


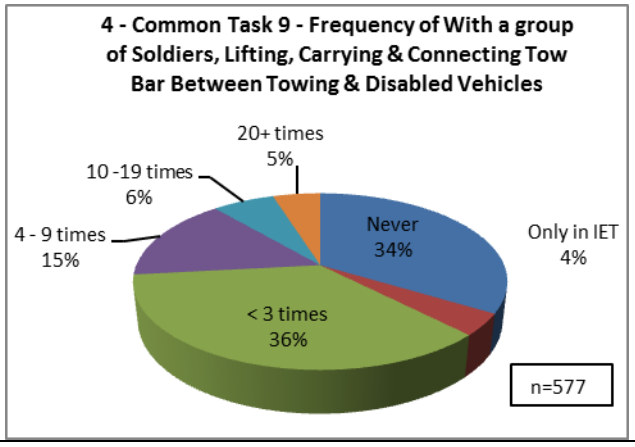












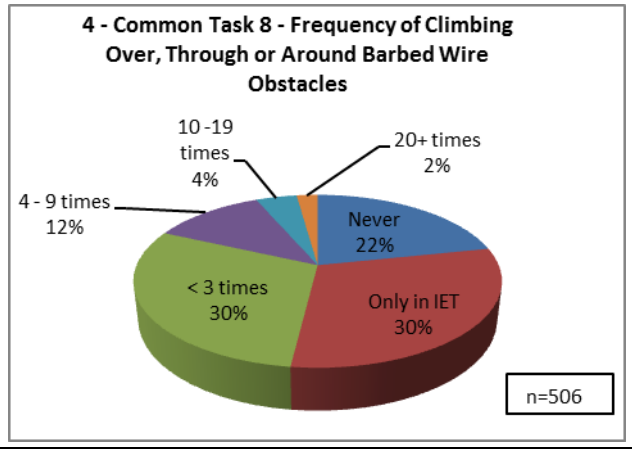
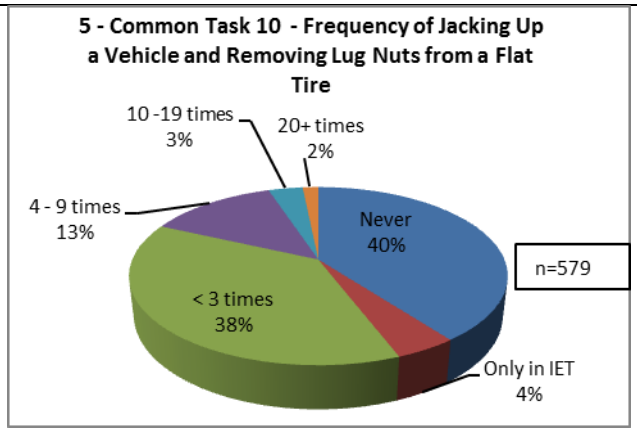
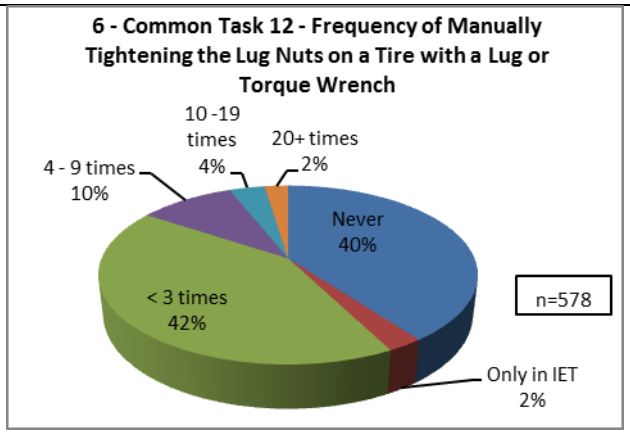
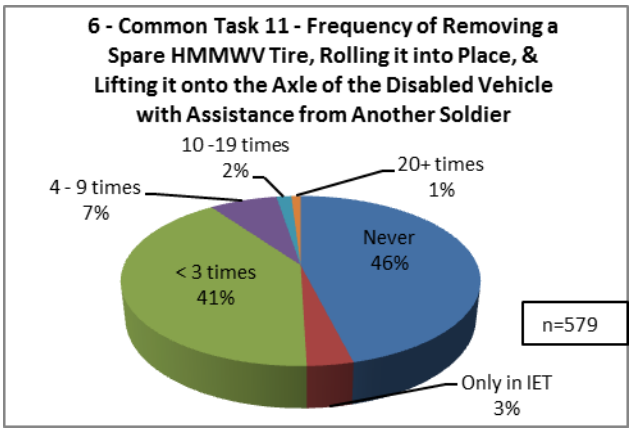
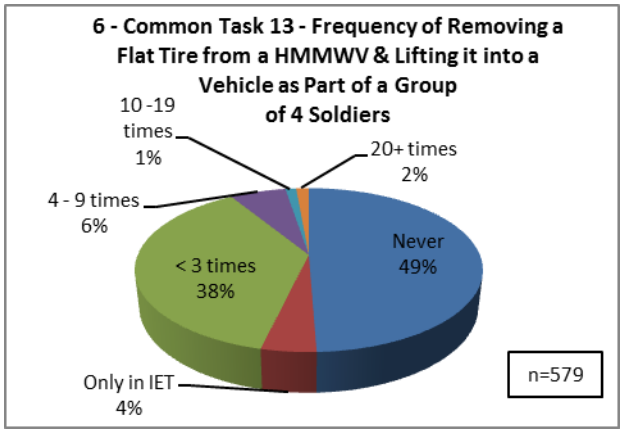


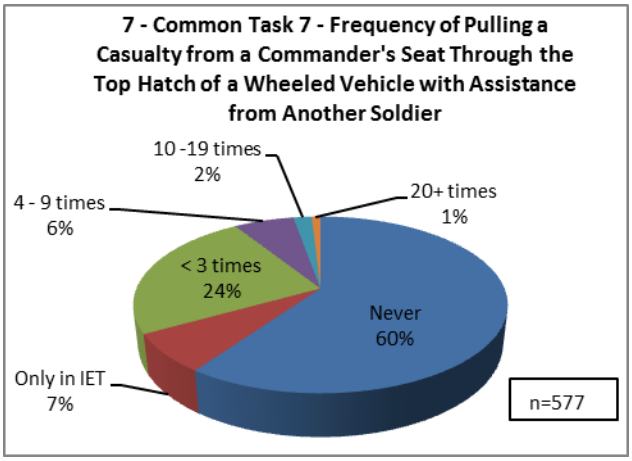
Figure 1. Continued

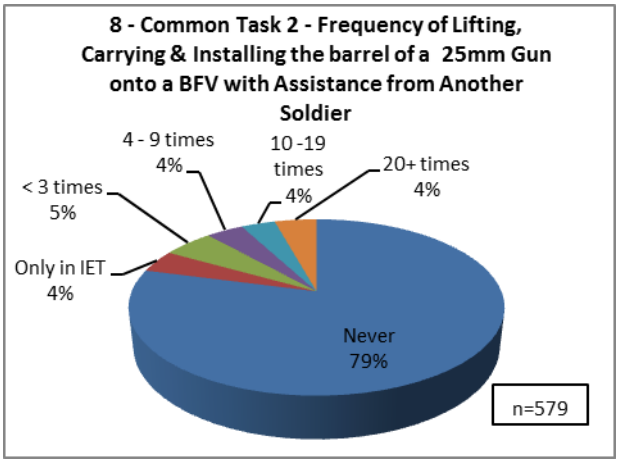


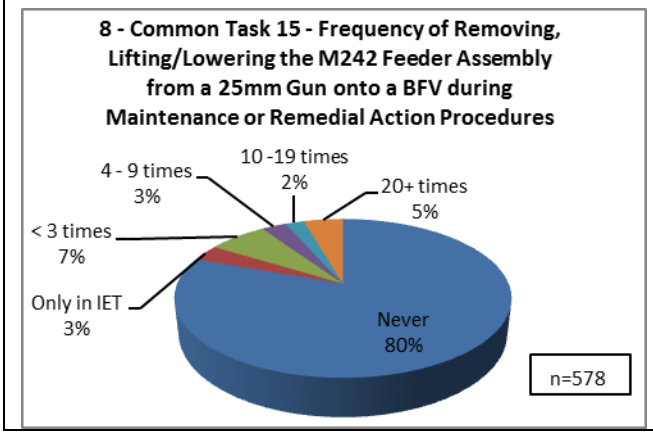












For each of the tasks represented by the JAQ, respondents were asked whether they were expected to complete the task if the situation arises. Table 5 displays the responses to this question for each of the common tasks.

Table 5. The extent to which each common task was expected to be performed

Task[1]	Yes, I am expected to perform this task	No, I am not expected to perform this task
1) Perform a dismounted foot march or tactical movement (n=580)	93%	7%
1) Lift and drag a casualty to safe location as quickly as possible (n=578)	91%	9%
2) Use a shovel or entrenching tool to fill sand bags when preparing to build a fighting position (n=582)	81%	19%
3) Lift and carry sandbags to an emplacement location and build a fighting position (n=581)	74%	26%
3) Throw a hand grenade (n=577)	69%	31%
4) With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV, or Stryker from a towing vehicle to the disabled vehicle (n=579)	63%	37%
4) Jack up a vehicle and remove lug nuts from a flat tire (n=579)	61%	39%
4) With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle (i.e., BFV or Stryker) (n=581)	60%	40%
4) Manually tighten the lug nuts on a tire with a lug or torque wrench (n=579)	58%	42%
4) With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle (n=581)	58%	42%
4) Climb over, through, or around barbed wire obstacles (n=506)	57%	43%
5) As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle (n=577)	52%	48%
5) Lift and carry ammunition cans from the supply point (e.g., ammunition center or truck) to the back of a BFV (n=576)	50%	50%
6) While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures (n=579)	29%	71%
6) With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV (n=576)	29%	71%

[1] Tasks with the same ranking numbers (i.e., with the same numbers on the far left of the listed tasks) do not statistically differ from each other.

2.2. Rated Importance of Each Common Task

Tasks with the same ranking numbers (i.e., with the same number on the far left in the chart title) do not statistically differ from each other. So for example, in Figure 2, all the tasks numbered "1" are rated at about the same level of importance.

Figure 2. The rated importance of each common task

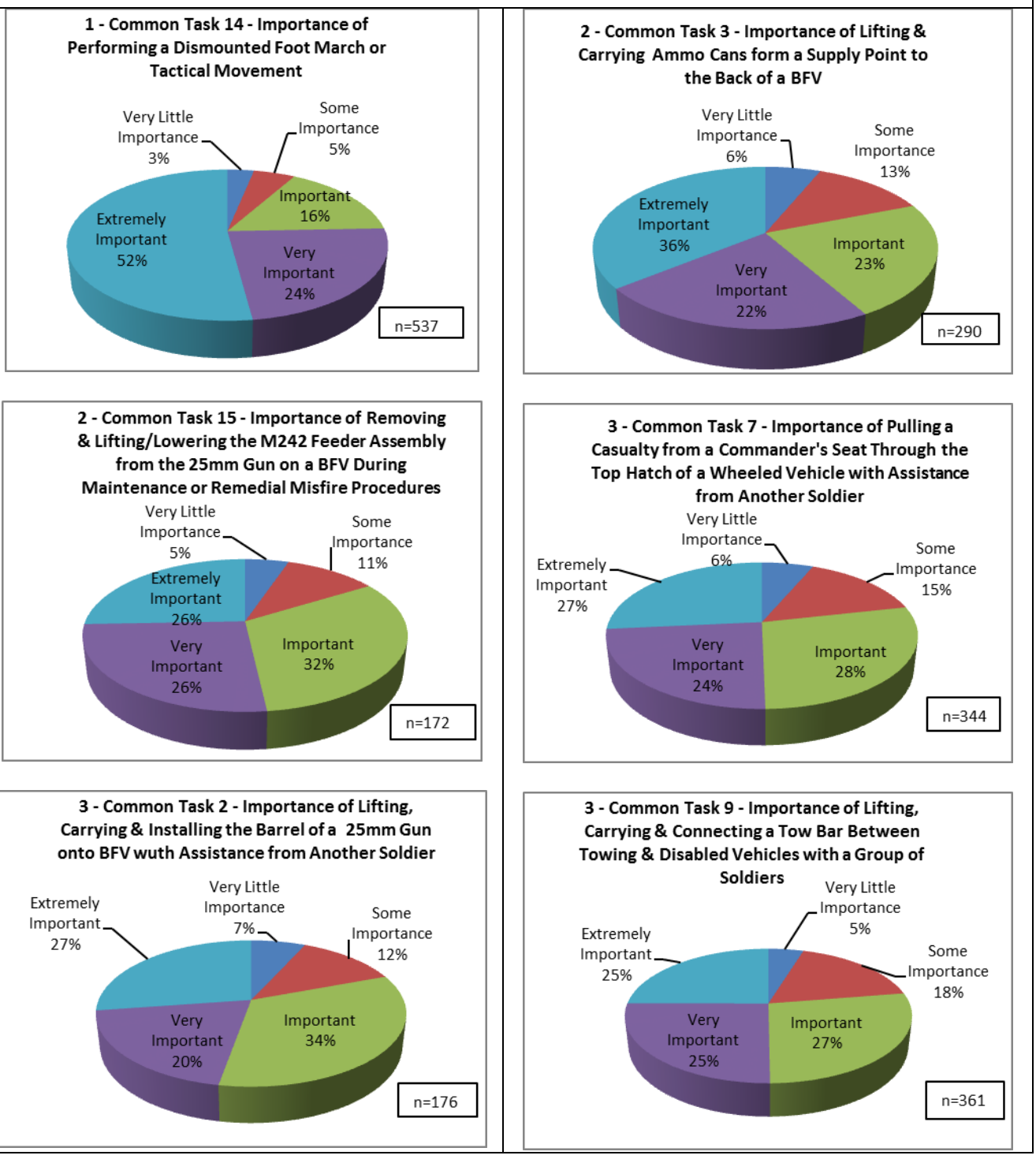
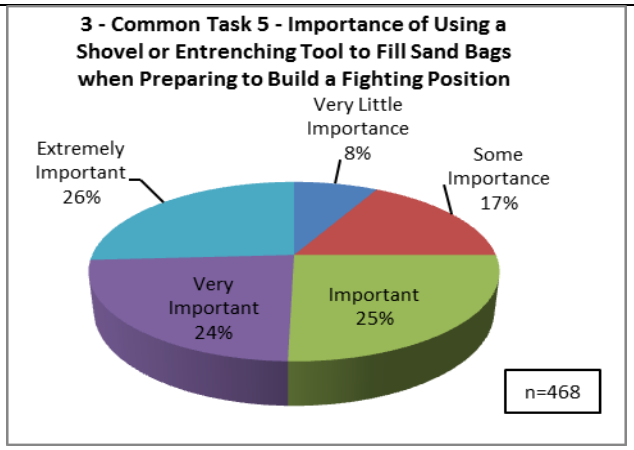
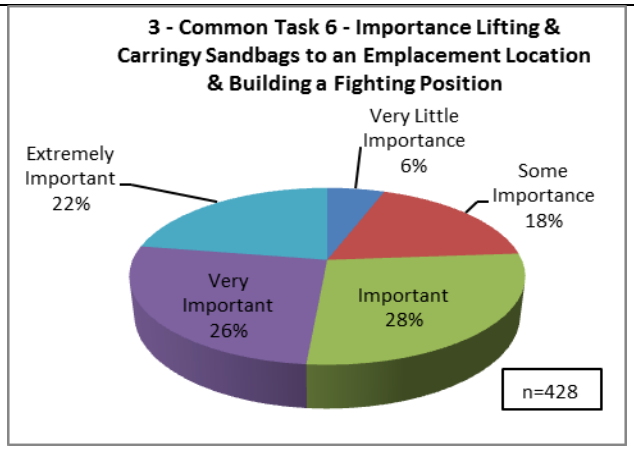
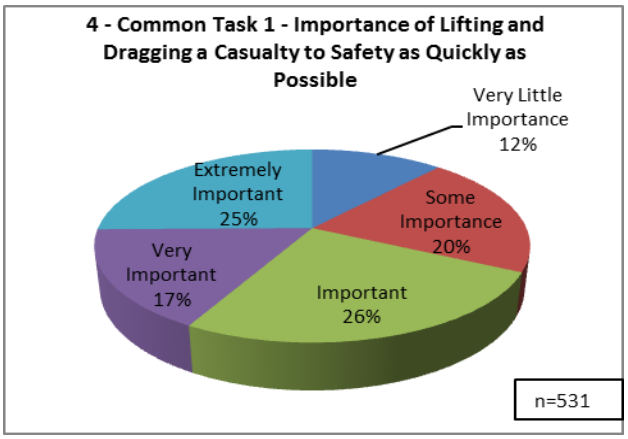
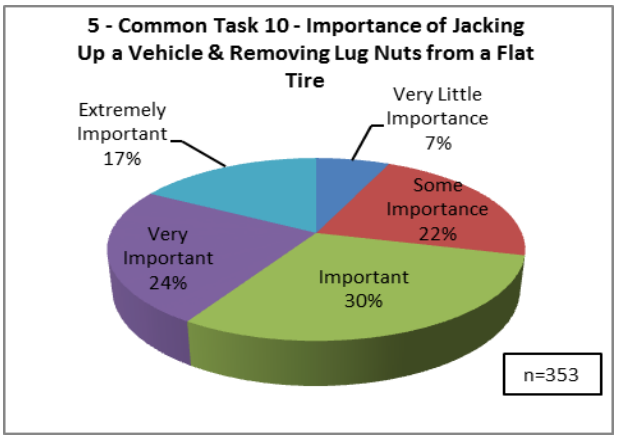


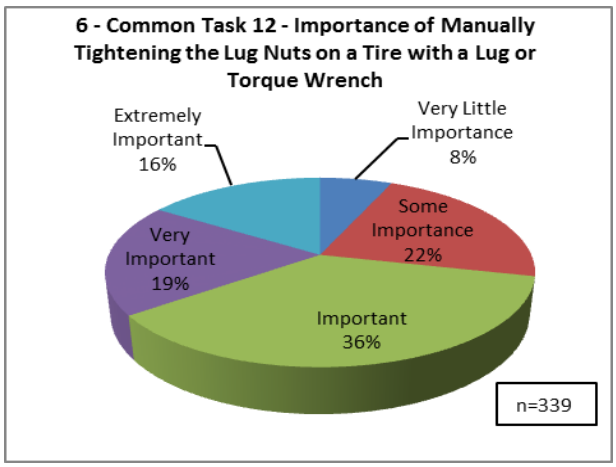
Figure 2. Continued

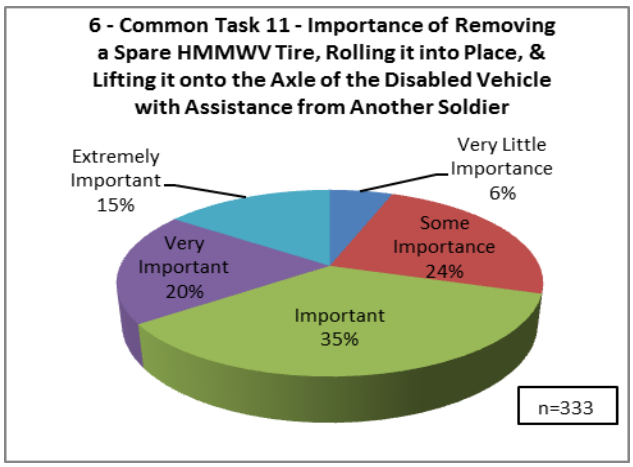


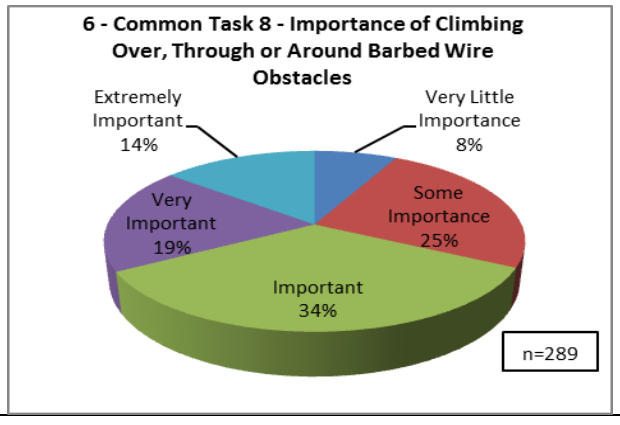












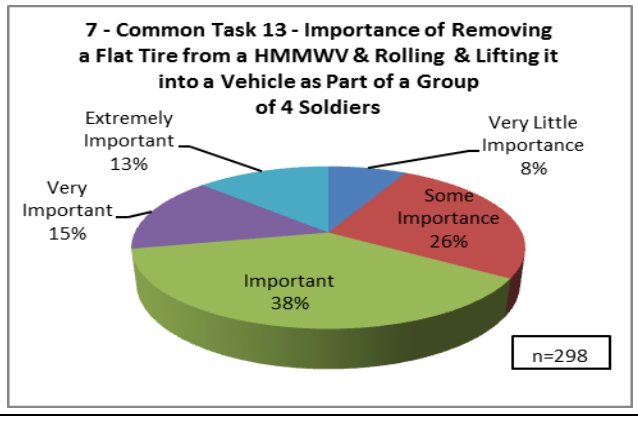
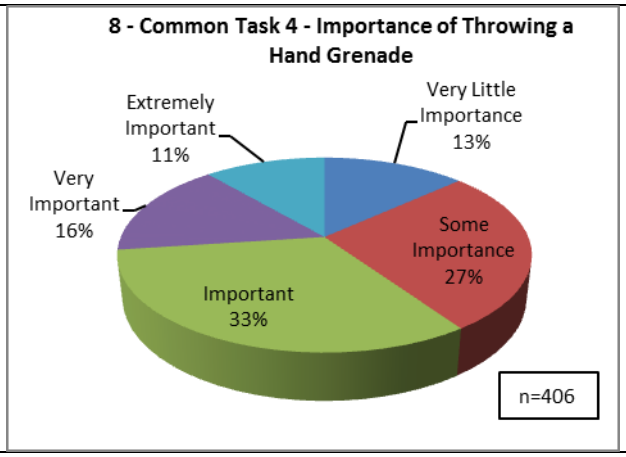


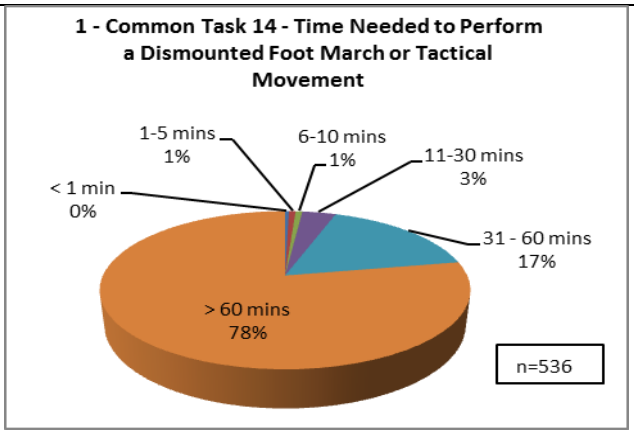
Figure 2. Continued

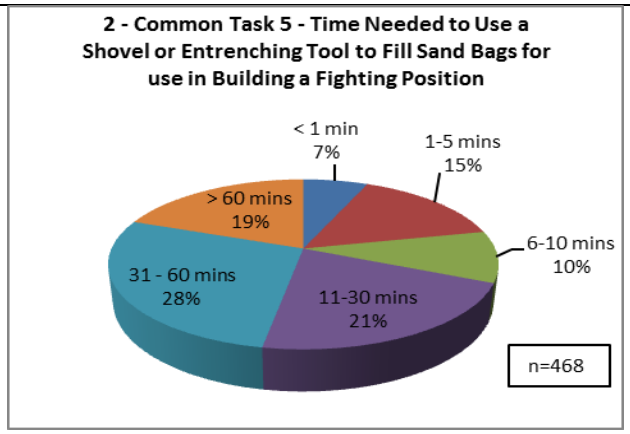


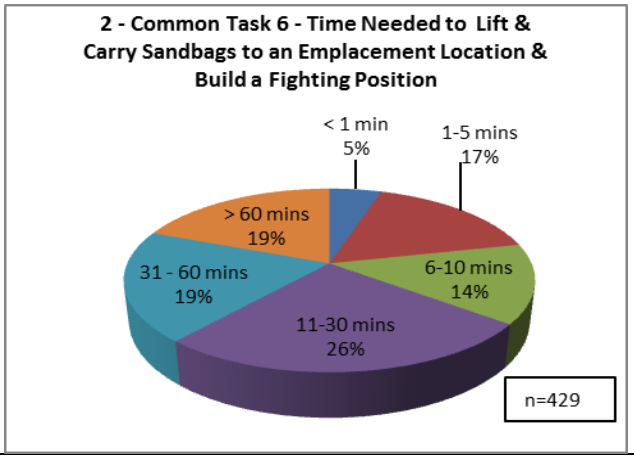
2.3. Rated Time Each Common Task Takes to Perform

Tasks with the same ranking numbers (i.e., with the same number on the far left in the chart title) do not statistically differ from each other. So for example, in Figure 3, both the tasks numbered "2" are rated as taking about the same amount of time to complete.

Figure 3. The rated time each common task takes to perform







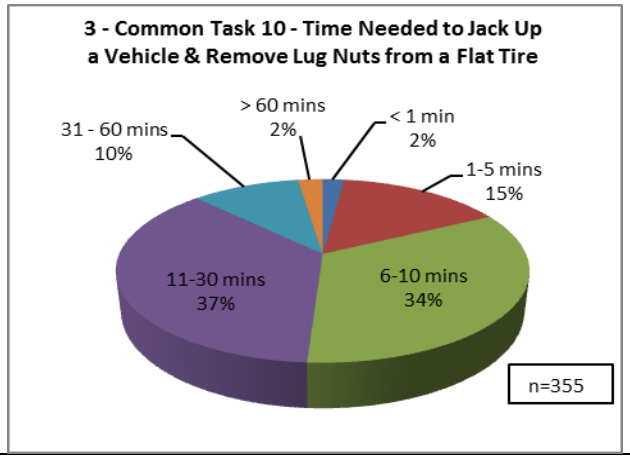
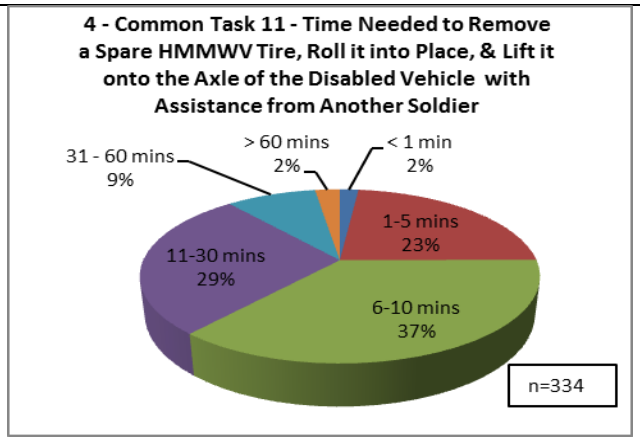
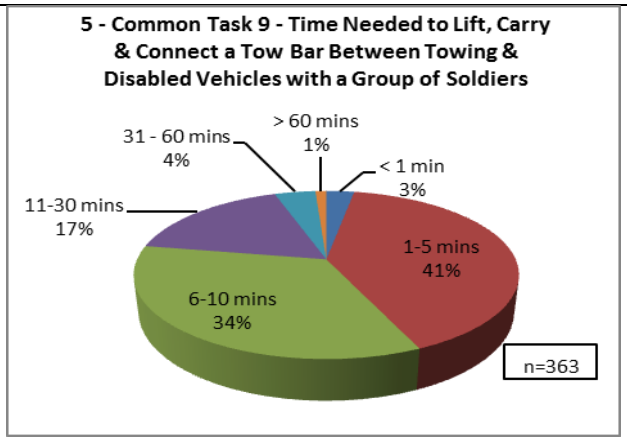
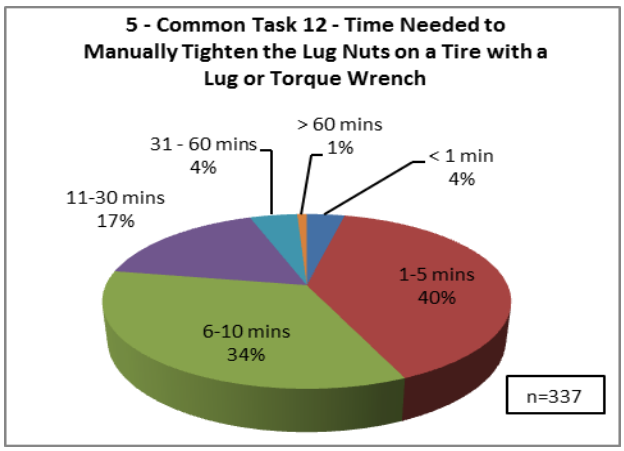
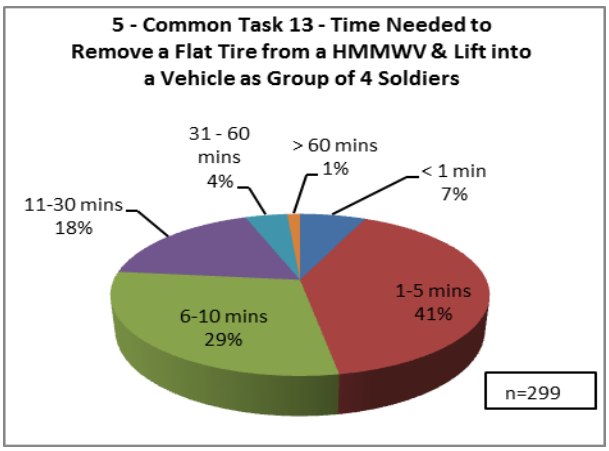


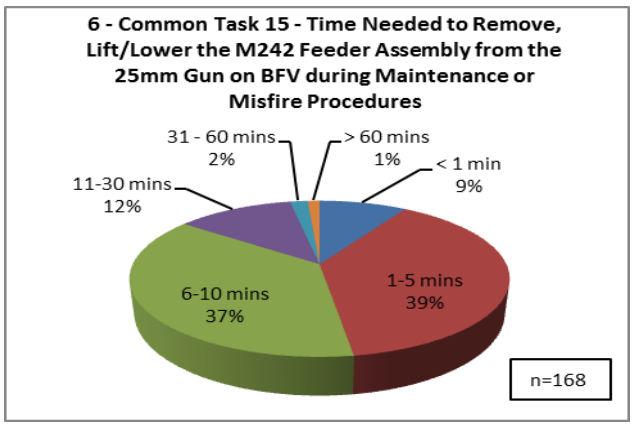
Figure 3. Continued

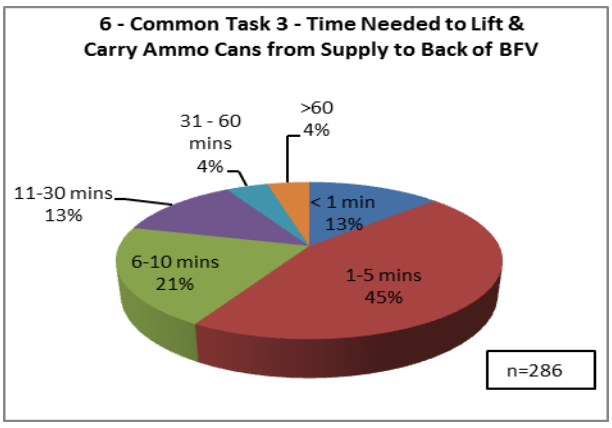


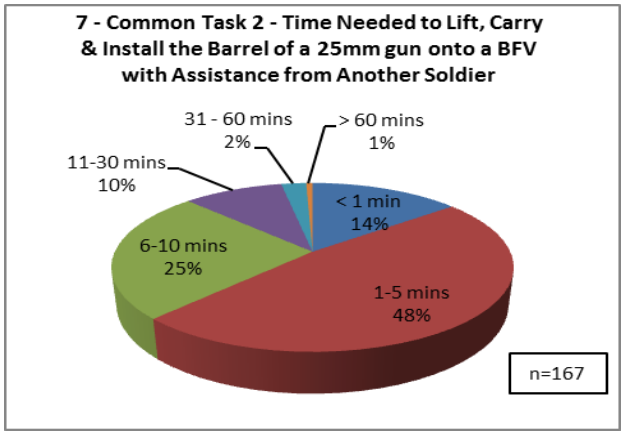












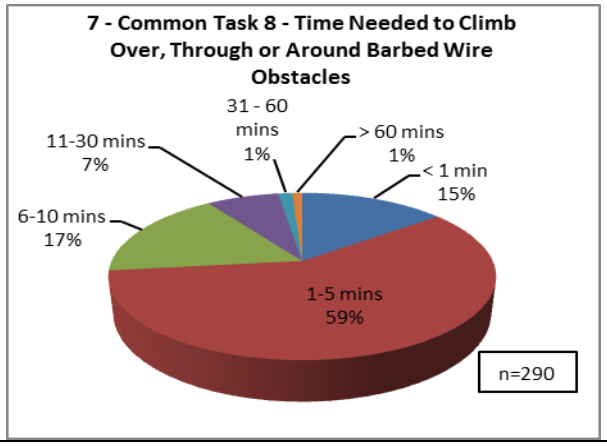
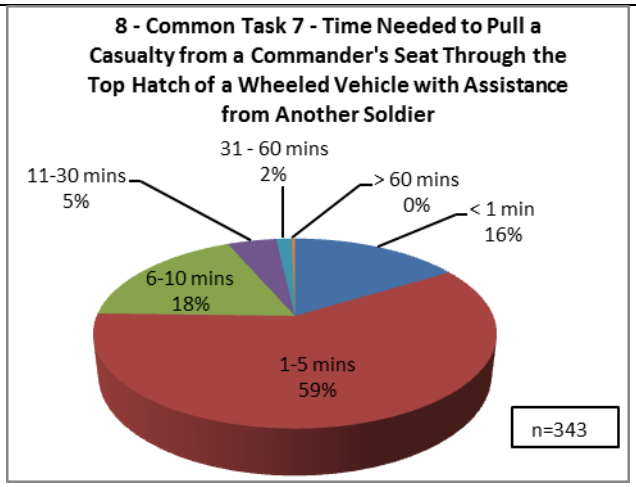
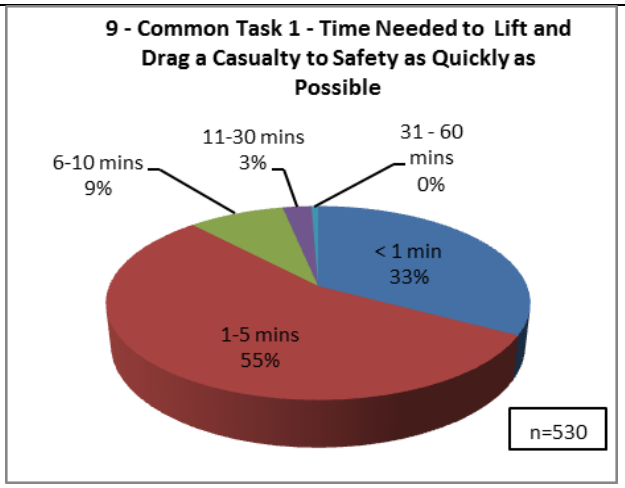
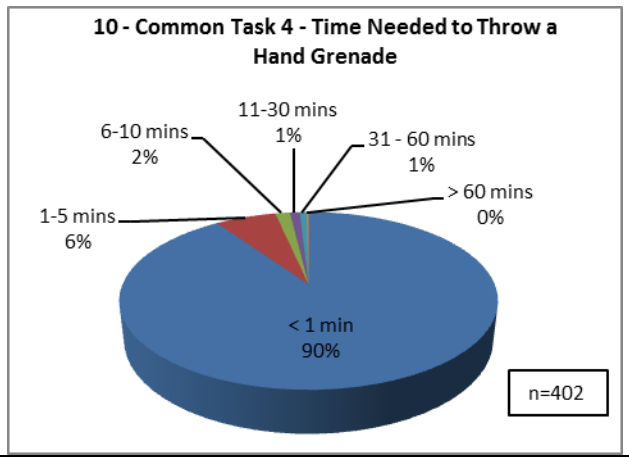


Figure 3. Continued



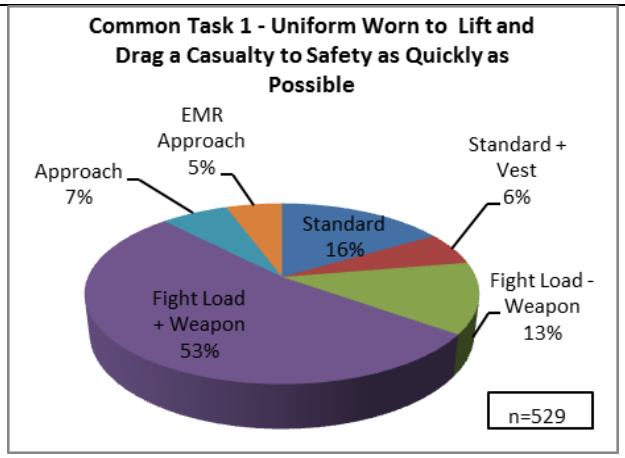


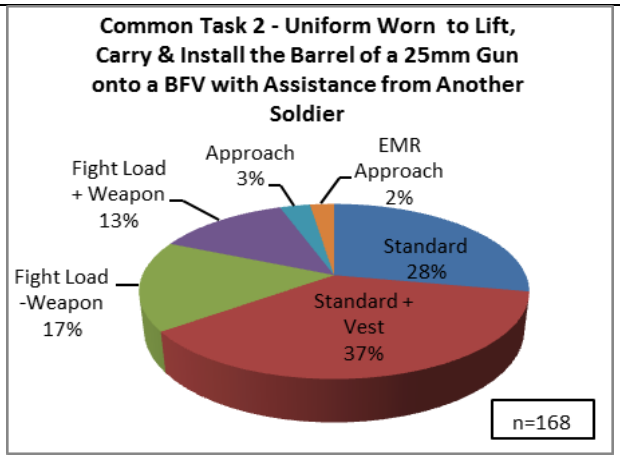


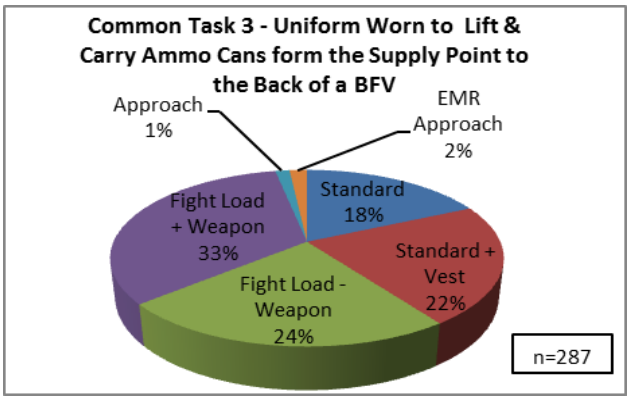
2.4. Uniforms Worn for Each Common Task

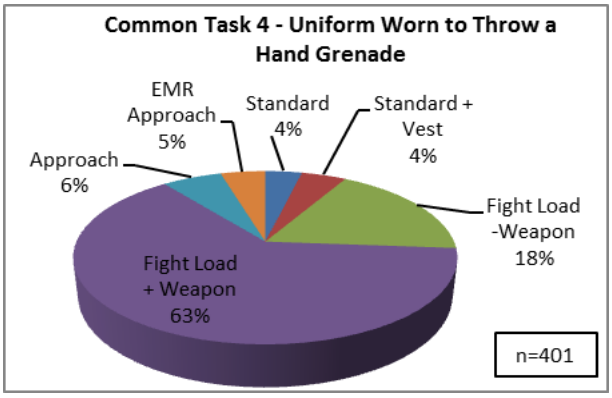
Response options for these questions were 1) Standard Uniform, 2) Standard Uniform with Vest, 3) Fighting Load Minus Weapon, 4) Fighting Load with Weapon, 5) Approach March Load, and 6) Emergency Approach March Load. Data representing the response options for each common task is displayed in Figure 4.

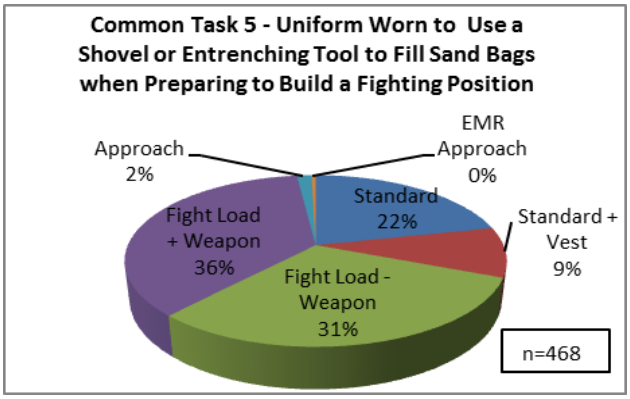
Figure 4. Uniforms worn for each common task

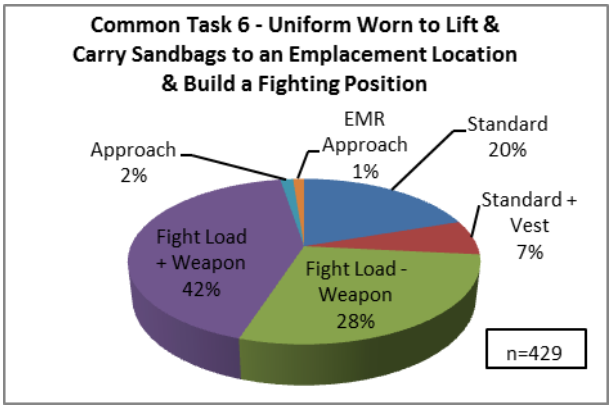


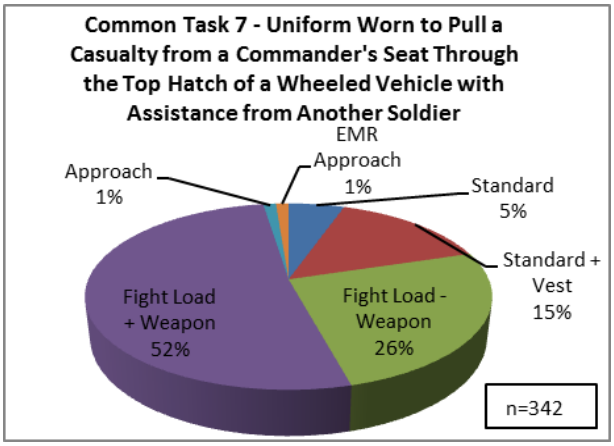












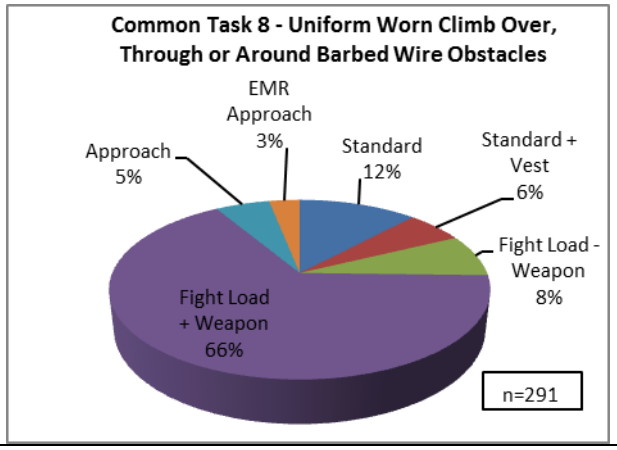
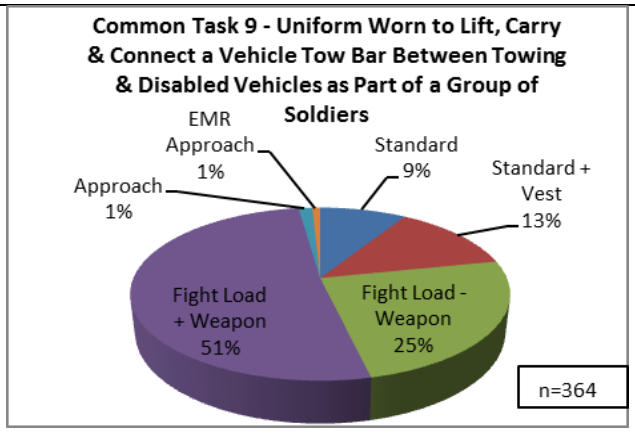
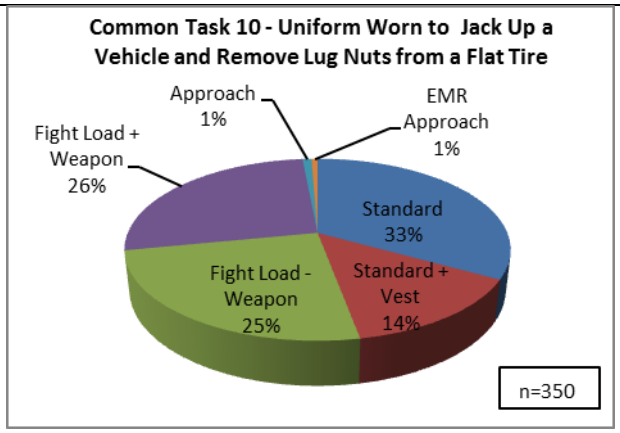
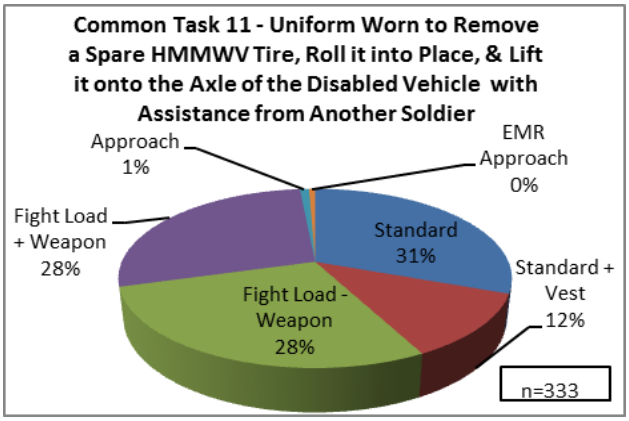
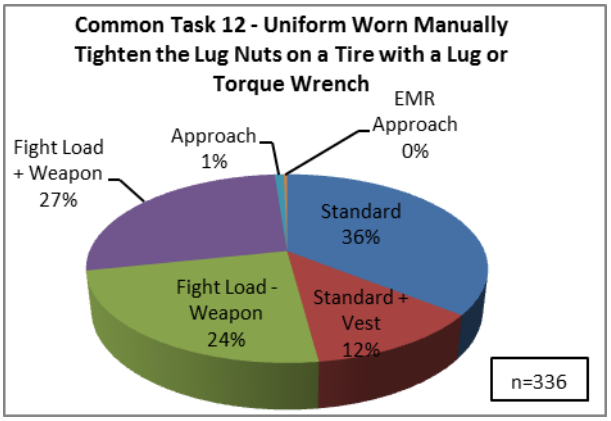


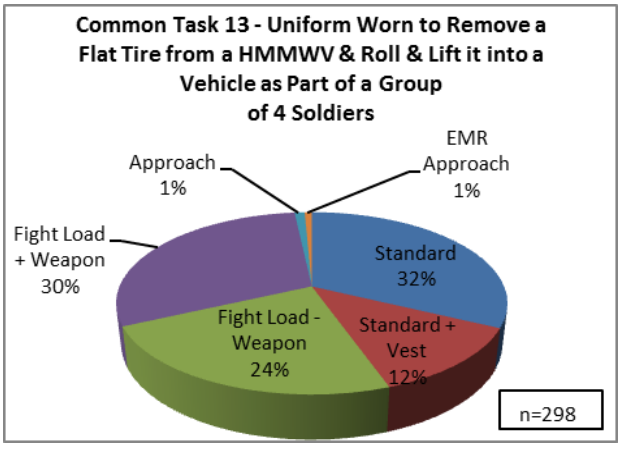
Figure 4. Continued

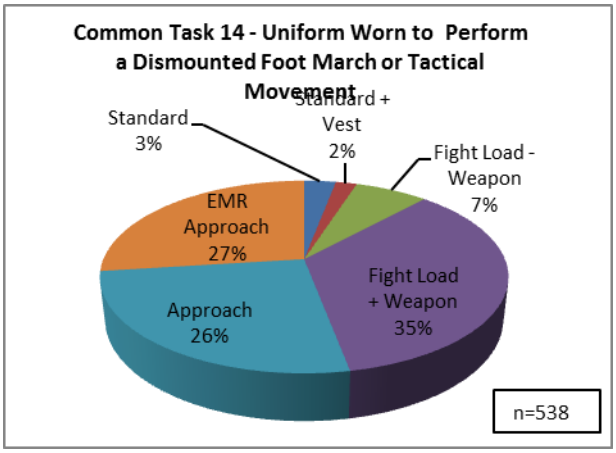


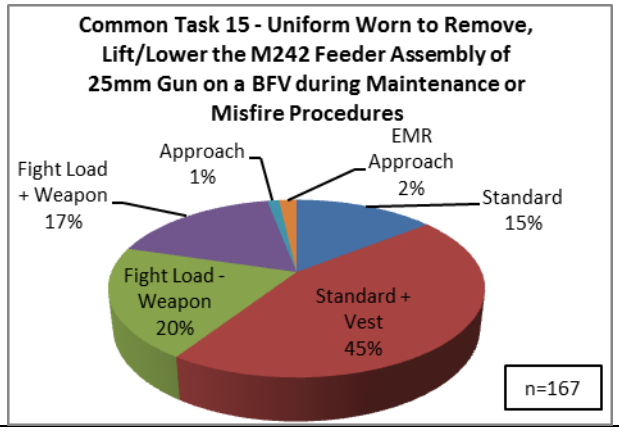












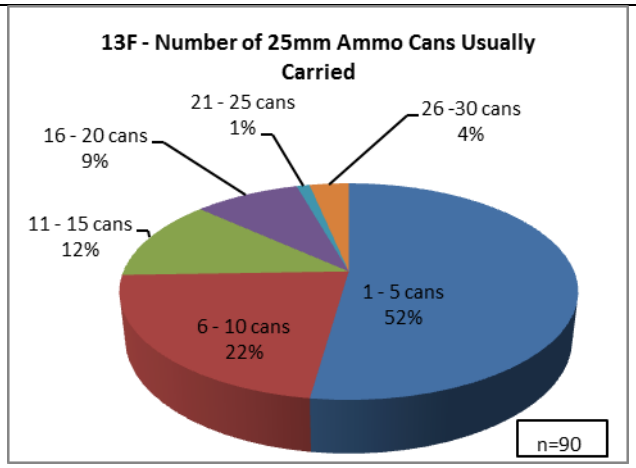
Section 3: Common Task Supplemental Information

Following is information obtained by a second set of job-related questions included in both the Common Task and 13F-Specific JAQ's. These questions were asked to gain a more complete picture of the common tasks addressed in the previous portions of the two questionnaires.

3.1. Time, Quantity and Distance Pertaining to Common Tasks

25mm Ammo Cans: Six questions were asked in this section. The first two questions using a fixed-response format asked: 1) When fully supplying a BFV, what is the total number of 25mm ammo cans you usually carry from a supply point to the vehicle? 2) How far (in yards) did you you usually carry 25mm ammo cans from the supply point to the BFV? Figure 5 displays the responses to these two questions. An additional four questions were asked pertaining to the carrying of 25mm ammo cans using an open response format: 3) What is the smallest number of 25mm ammo cans you ever personally carried from a supply point to a BFV? 4) What is the largest number of 25mm ammo cans you ever personally carried from a supply point to a BFV? 5) What is the shortest distance (yards) you ever carried 25mm ammo cans from a supply point to a BFV? 6) What is the longest distance (yards) you ever carried 25mm ammo cans from a supply point to a BFV? Table 6 summarizes the responses to these four questions.

Figure 5. Number of 25mm ammo cans carried and the distance traveled to BFV



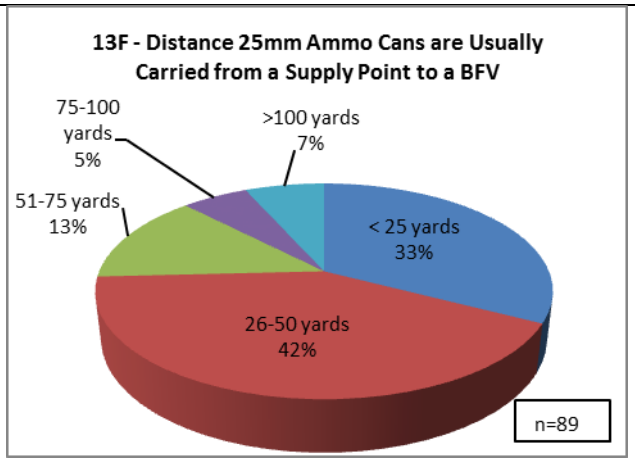
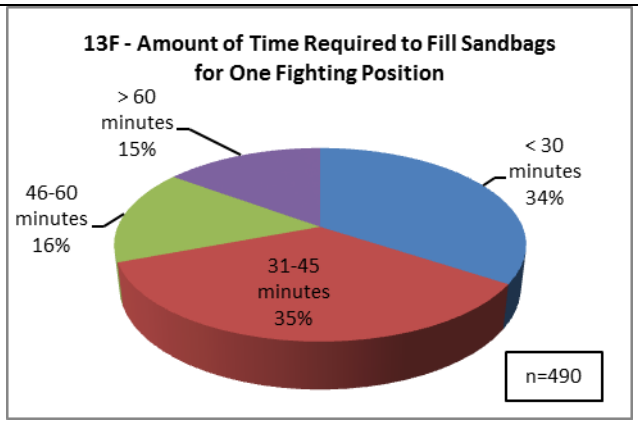


Table 6. Number of 25mm ammo cans and distance subjects carried from a supply point to a BFV

Task		Mean	Median	Mode	SD
Number of cans carried	Smallest number (n=83)	4.1	1.0	1	17.4
	Largest number (n=83)	8.5	4.0	2	18.0
Distance Carried (yards)	Shortest Distance (n=83)	16.1	10.0	10	18.4
	Farthest Distance (n=83)	72.9	50.0	50	68.9

Filling Sandbags and Building a Fighting Position: Six questions were asked in this section. The first two questions using a fixed-response asked: 1) How long does it usually take you to fill enough sandbags to build one fighting position? 2) How long does it usually take you to carry sandbags to a designated location and build a fighting position? Figure 6 displays the responses to these two questions. An additional four questions were asked pertaining to filling and carrying sandbags using an open response format: 3) When filling enough sandbags to build a single fighting position, what is the shortest amount of time (in minutes) it took you to fill enough sandbags? 4) What is the longest amount of time (in minutes) it took you to fill enough sandbags? 5) In the past, when you've carried sandbags and used them to build a fighting position, what is the shortest amount of time (in minutes) it has taken you to complete the task? 6) What is the longest amount of time (in minutes) it has taken you to complete the task? Table 7 displays data representing the answers to these four questions.

Figure 6. Time to fill and carry sandbags to build a fighting position



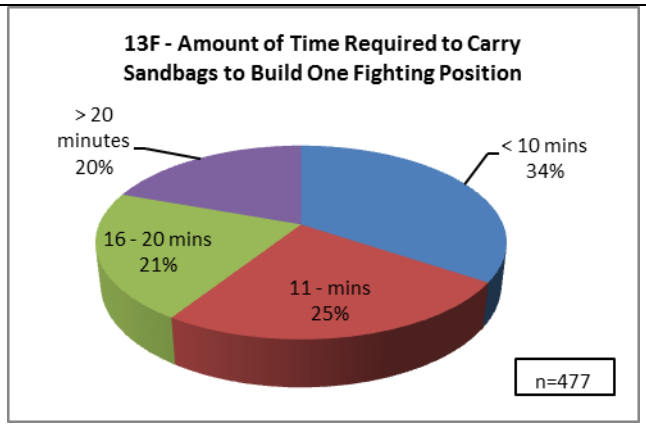
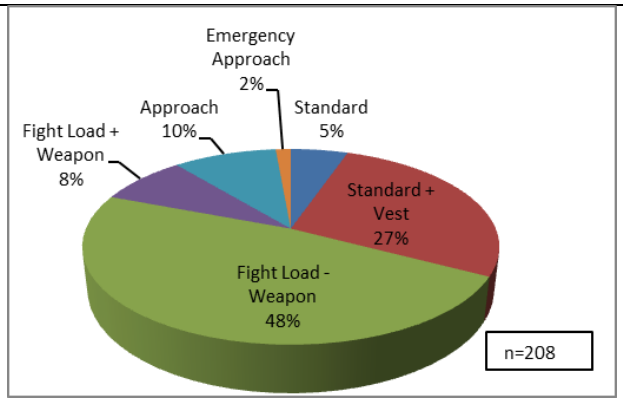


Table 7. Time (minutes) spent by respondents to fill and carry sandbags for a fighting position, and then build the fighting position

Task		Mean	Median	Mode	SD
Time to Fill Sandbags (minutes)	Shortest time (n=463)	26.9	25.0	30	18.5
	Longest time (n=462)	60.4	50.0	60	52.4
Time to Carry Sandbags (minutes)	Shortest time (n=446)	17.7	12.0	10	23.1
	Longest time (n=444)	40.6	30.0	30	63.6

Uniform Worn When Riding in a BFV: One fixed-response question was asked in this section: Which response best describes the uniform you wear when riding in the crew compartment of a BFV or Stryker? The response options for this question were: 1) Standard Uniform, 2) Standard Uniform with Vest, 3) Fighting Load Minus Weapon, 4) Fighting Load with Weapon, 5) Approach March Load, and 6) Emergency Approach March Load. Figure 7 displays the responses to this question.

Figure 7. Uniform worn by cannon crewmembers and fire support specialists when riding in the crew compartment of a BFV or Stryker



Changing a Vehicle Track Section or Tire: Six questions were asked in this section of the JAQ. The first two questions using a fixed-response format asked: 1) When you changed a section of track on a vehicle (for example, BFV, M9 armored combat earthmover [ACE], Assault Breacher Vehicle), how many other Soldiers usually helped you perform the task? 2) When you changed a tire on a vehicle (for example, a Stryker or mine-resistant ambush protected [MRAP] vehicle), how many other Soldiers

usually helped you perform the task? Figure 8 displays the responses to these two questions. An additional four questions were asked in this section using an open response format: 3) When you changed a section of track on a vehicle, what is the smallest number of Soldiers who helped you perform the task? 4) What is the greatest number of Soldiers who helped you perform the task? 5) When you changed a tire on a vehicle like the Stryker or MRAP, what is the smallest number of Soldiers who helped you perform the task? 6) What is the greatest number of Soldiers who helped you perform the task? Table 8 displays data representing the answers to these four questions.

Figure 8. Number of soliders used to change sections of a track and a tire on a vehicle

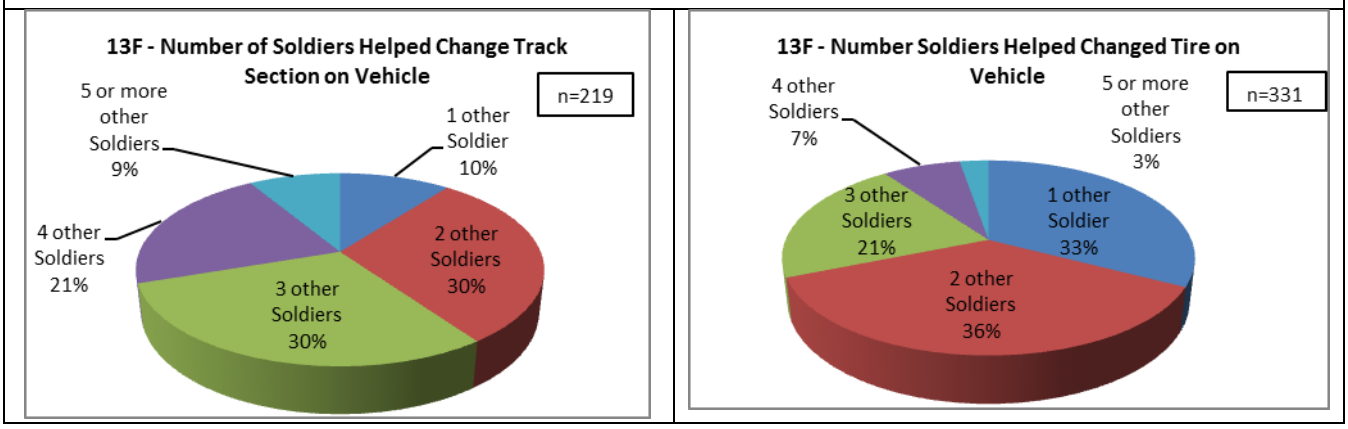


Table 8. Number of soliders helping the subject to change vehicle tire and track section

Task		Mean	Median	Mode	SD
Number of Soldiers to assist with changing vehicle tracks	Fewest soldiers (n=218)	2.2	2.0	2	1.2
	Most soldiers (n=218)	5.4	5.0	4	3.0
Number of Soldiers to assist with changing a tire	Fewest soldiers (n=321)	1.7	2.0	1	1.1
	Most soldiers (n=321)	3.7	3.0	2	2.4

Wrenches Used to Loosen Lug Nuts: Two questions were asked in this section using an open response format: 1) When changing a tire on a vehicle (for example, a Stryker or MRAP), what percentage of those times did you loosen and/or tighten the lug nuts manually with a wrench? 2) What

percentage of those times did you use an air-operated impact wrench? Table 9 displays data representing the answers to these two questions.

Table 9. Percentage of times the subject loosened lug nuts manually with a wrench or by using an air-operated impact wrench

Frequency of Performing Task (%)	Mean	Median	Mode	SD
Manually (n=338)	67.9	75.0	100	33.8
Using Impact Wrench (n=338)	25.6	15.0	0	29.4

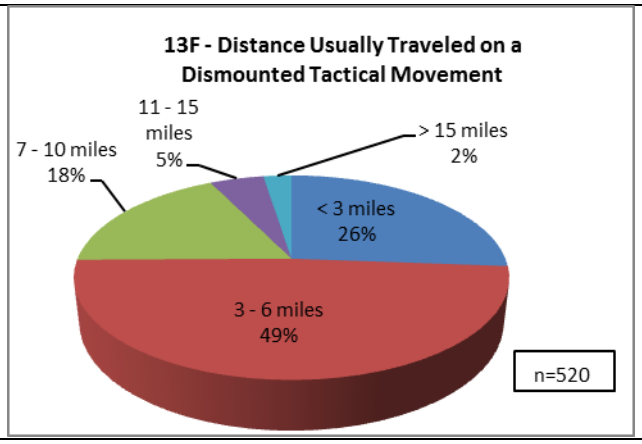
Distances Traveled During Training Road Marches: One question was asked in this section: What percentage of the time does your unit march the following distances during training road marches? Respondents were asked to either indicate that they had not completed any road marches in a training setting, or provide percentages to eight ranges of distances, as follows: 1) 0 to 3 miles; 2) 4 to 6 miles; 3) 7 to 9 miles; 4) 10 to 12 miles; 5) 13 to 15 miles; 6) 16 to 18 miles; 7) 19 to 20 miles; and 8) Over 20 miles. Participants were instructed that their answers in these eight distance ranges (i.e., eight percentage responses, one in each of the eight distance ranges) should sum to 100%. Table 10 displays data representing the answers to each of the distance ranges in response to this question.

Table 10. Percentage of training road marches at different distances by 13B Soldiers (n=492)

Distance	Mean (%)	Median (%)	Mode (%)	SD	Minimum (%)	Maximum (%)
0 to 3 miles	15.1	5.0	0	21.8	0	100
4 to 6 miles	38.0	33.0	50	27.5	0	100
7 to 9 miles	17.9	15.0	0	18.9	0	100
10 to 12 miles	20.4	15.0	0	22.2	0	100
13 to 15 miles	3.1	0	0	7.3	0	50
16 to 18 miles	1.4	0	0	5.7	0	100
19 to 20 miles	1.1	0	0	3.9	0	40
Over 20 miles	2.9	0	0	13.3	0	100

Dismounted Tactical Movement: Six questions were asked in this section. The first two questions using a fixed-response format asked: 1) When performing a dismounted tactical movement, how far do you usually move? 2) When you performed a dismounted tactical movement, how heavy was the load you usually carried? Response options to question number two were: 1) Ruck Sack (40 lbs), 2) Fighting Load (about 80 lbs), 3) Approach March Load: Fighting load with weapon plus 20-25 lbs assault pack, and 4) Emergency Approach March Load (about 125 lbs or more): Fighting load with sustainment load weighing 40-50 lbs). Figure 9 displays the responses to these two questions. The other four questions in this section were asked using an open response format: 3) When you performed a dismounted tactical movement, what is the shortest distance you moved (in miles)? 4) What is the longest distance you moved (in miles)? 5) When you performed a dismounted tactical movement, what is the lightest load you carried (in pounds)? 6) What is the heaviest load you carried (in pounds)? Table 11 displays data representing the answer to these four questions.

Figure 9. The distance traveled and load carried during a dismounted tactical movement



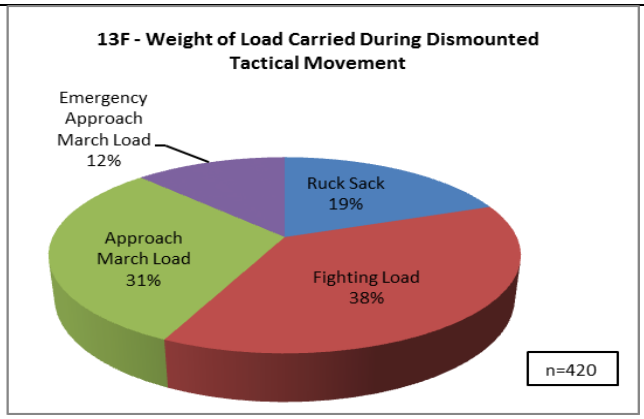
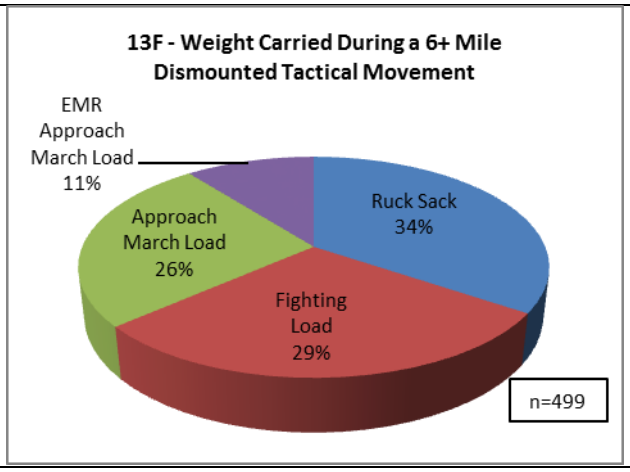


Table 11. Distance traveled and weight of load carried during a dismounted tactical movement

Task		Mean	Median	Mode	SD
Distance (miles)	Shortest Distance (n=489)	2.2	1.0	1	2.9
	Longest Distance (n=507)	13.1	12.0	12	15.5
Load (lbs)	Lightest Load (n=507)	36.5	35.0	35	23.0
	Heaviest Load (n=506)	89.4	85.0	80	35.9

Six-Plus Mile Dismounted Tactical Movement: Six questions were asked in this section. The first two questions using a fixed-response asked: #1) How much weight do you usually carry when performing a dismounted tactical movement of 6 miles or more? (Response options to this question were: 1) Ruck Sack (40 pounds), 2) Fighting Load (about 80 pounds), 3) Approach March Load: Fighting load with weapon plus 20-25 lbs assault pack, and 4) Emergency Approach March Load (about 125 pounds or more): Fighting load with sustainment load weighing 40-50 pounds), and question #2) How long does it usually take you to perform a dismounted tactical movement of at least 6 miles while carrying a load of 100 pounds or more? Figure 10 displays the responses to these two questions. An additional four questions were asked in this section using an open response format: 3) When you performed a dismounted tactical movement of 6 miles or more, what is the lightest load you carried (in pounds)? 4) What is the heaviest load you carried (in pounds)? 5) When you performed a dismounted tactical movement of 6 miles or more while carrying a load of 100 pounds or more, what is the shortest time it took you (in hours) to complete this task? 6) What is the longest time it took you (in hours) to complete this task? Data representing the answers to these questions are displayed in Table 12.

Figure 10. Loads carried and time to complete dismounted tactical movement over six miles



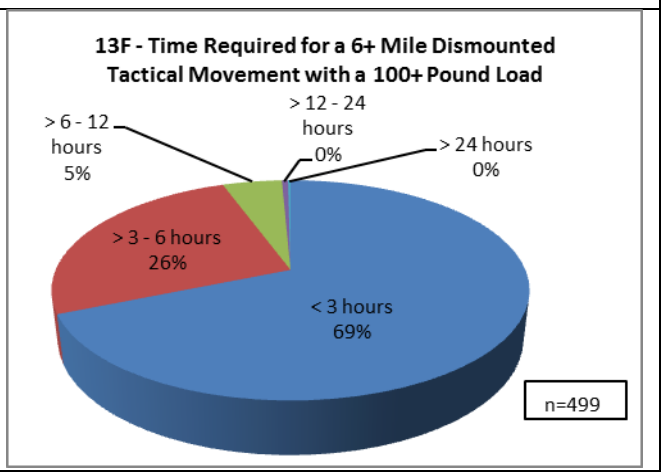


Table 12. Loads (pounds) carried by subjects during a dismounted tactical movement over six miles and time required to complete a dismounted tactical movement while carrying 100 lbs or more

Task		Mean	Median	Mode	SD
Load Carried (pounds)	Lightest Load (n=487)	35.7	35.0	35	21.2
	Heaviest Load (n=487)	80.9	80.0	80	34.8
Time (hours) to complete over 100 lbs tactical movement	Shortest Time (n=375)	3.6	2.0	2	9.4
	Longest Time (n=376)	6.1	4.0	3	15.6

Carrying Sandbags: Three questions were asked in this section. The first question, using a fixed-response format, asked: When you carried sandbags to build a protective bunker, how long did it usually take you to carry the required number of sandbags to the designated location for the bunker? Figure 11 displays the responses to this question. An additional two questions were asked in this section using an open response format: 2) When you carried sandbags to build a protective bunker, what is the shortest time (in minutes) it took to carry the sandbags and build the bunker? 3) What is the longest time (in minutes) it took to carry the sandbags and build the bunker? Table 13 displays data representing the answers to these two questions.

Figure 11. Time to complete carrying sandbags to a designated location for a bunker

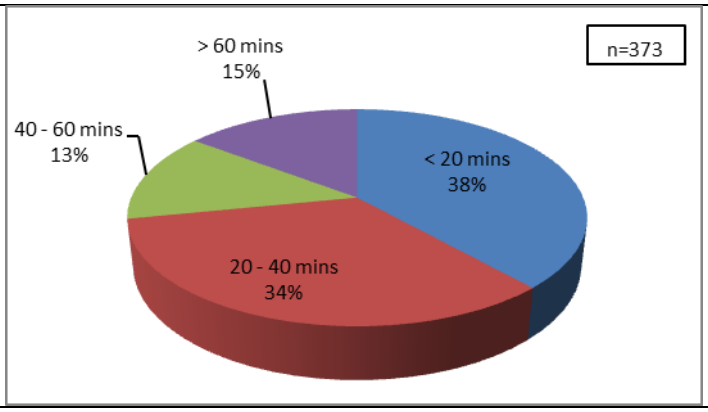


Table 13. Time (minutes) taken by respondent to carry sandbags and build a bunker

Time to Complete (minutes)	Mean	Median	Mode	SD
Shortest time (n=349)	27.6	20.0	20	37.7
Longest time (n=350)	78.9	45.0	60	272.5

Dragging a Casualty Under Fire: Six questions were asked in this section. The first two questions using a fixed-response format asked: 1) What is the furthest distance you've ever personally dragged a casualty while under fire? 2) What is the furthest distance you've ever observed a casualty being dragged by one or more other Soldiers while under fire? Figure 12 displays the responses to these two questions. An additional four questions were asked in this section using an open response format: 3) When dragging a casualty under fire, what percentage of the time have you dragged the casualty by yourself? 4) What percentage of the time have you dragged the casualty as part of a team? 5) When you observed a casualty being dragged while under fire, what percentage of the time were they dragged by a single individual? 6) What percentage of the time were they dragged by a two-person team? Tables 14 and 15 display data representing the answers to these four questions.

Figure 12. The furthest distance respondents physically dragged a casualty and observed a casualty being dragged under fire

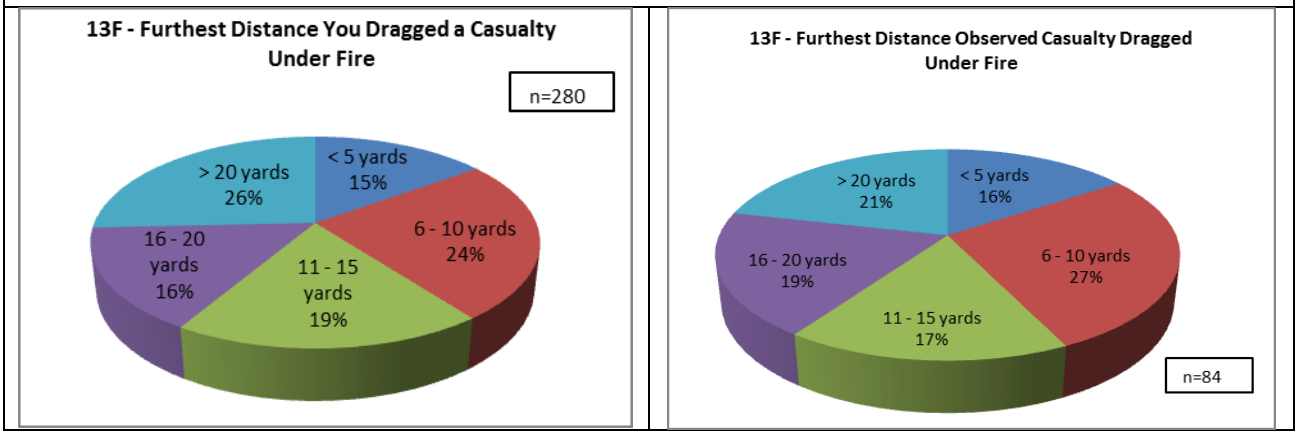


Table 14. Percentage of times a casualty was dragged under fire by the respondent or as part of a team

By Self or as Part of a Team	Mean	Median	Mode	SD
By Self (n=291)	52.9	50.0	50	35.1
Part of a Team (n=291)	39.9	50.0	0	33.7

Table 15. Percentage of times the respondent observed a casualty being dragged under fire by one soldier or by two

By One Soldier or Two	Mean	Median	Mode	SD
By One Soldier (n=161)	41.8	50.0	0	35.1
By Two Soldiers (n=161)	38.3	50.0	0	34.1

Section 4: Ratings of the 13B-Specific Tasks

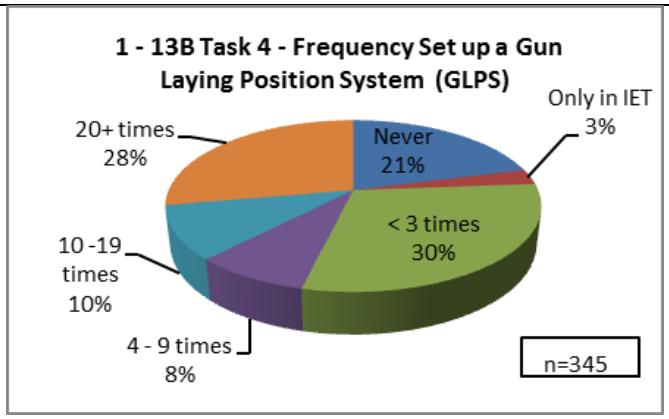
In the following pages, the results are summarized in terms of

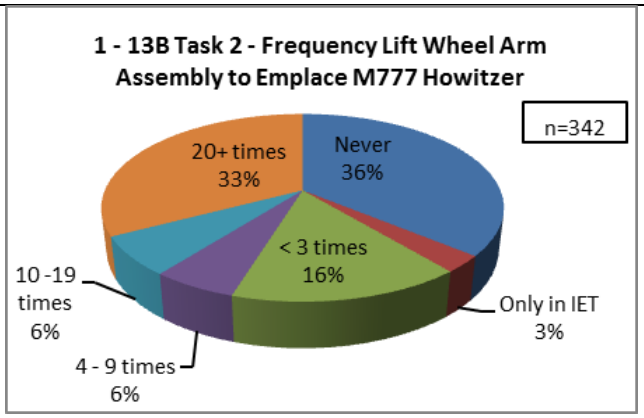
- how often each 13B-specific task was performed in the last two years,
- extent to which each task in the 13B-Specific JAQ was expected to be performed,
- rated importance of each 13B-specific task,
- rated time each 13B-specific task takes to perform, and
- uniforms worn for each 13B-specific task.

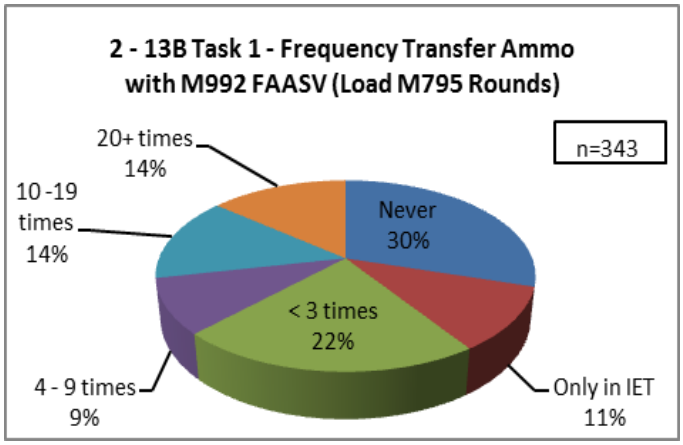
4.1. How Often Each 13B-Specific Task Was Performed in the Last Two Years

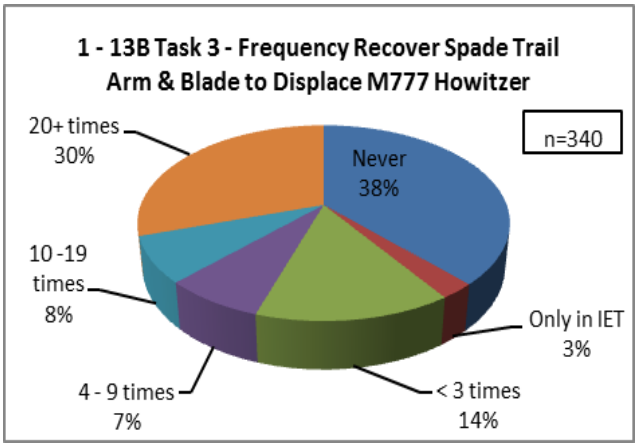
In this section, Figure 13 displays the data for the tasks addressed by the JAQ that are specific to the 13B MOS. Tasks with the same ranking numbers (i.e., with the same number on the far left in the chart title) do not differ statistically from each other.

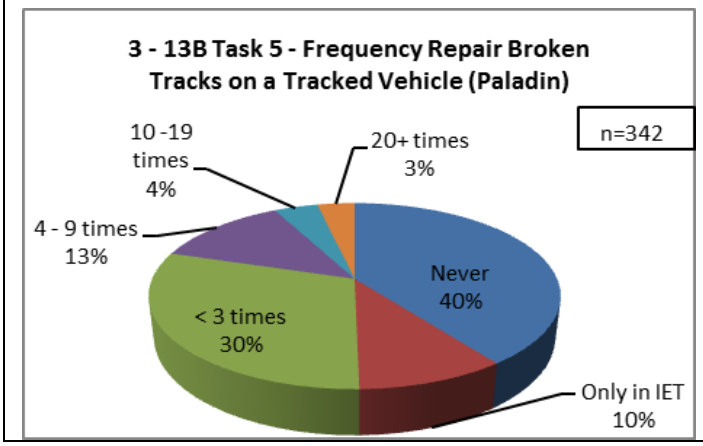
Figure 13. Frequencies of 13B-specific task performance in the last two years











For each of the tasks represented by the JAQ, respondents were asked whether they were expected to complete the task if the situation arises. Table 16 displays the responses to this question for each of the tasks included on the 13B-Specific JAQ.

Table 16. The extent to which each 13B-specific task was expected to be performed		
Task[1]	**Yes, I am expected to perform this task**	**No, I am not expected to perform this task**
1) Lift a Wheel Arm Assembly to emplace an M777 Howitzer (n=340)	87%	13%
1) Recover a Spade Trail Arm and Blade to displace an M777 Howitzer (n=341)	86%	14%
1) Set up a GLPS (n=341)	84%	16%
1) Repair broken tracks on a tracked vehicle such as a Paladin (n=342)	82%	18%
1) Transfer ammunition with an M992 FAASV (Load M795 HE rounds) (n=341)	81%	19%

[1] Tasks with the same ranking numbers (i.e., with the same numbers on the far left of the listed tasks) do not statistically differ from each other.

4.2. The Rated Importance of Each 13B-Specific Task

Tasks with the same ranking numbers (i.e., with the same number on the far left in the chart title) do not statistically differ from each other. So for example, in Figure 14, all the tasks numbered "1" are rated at about the same level of importance.

Figure 14. The rated importance of each 13B-specific task

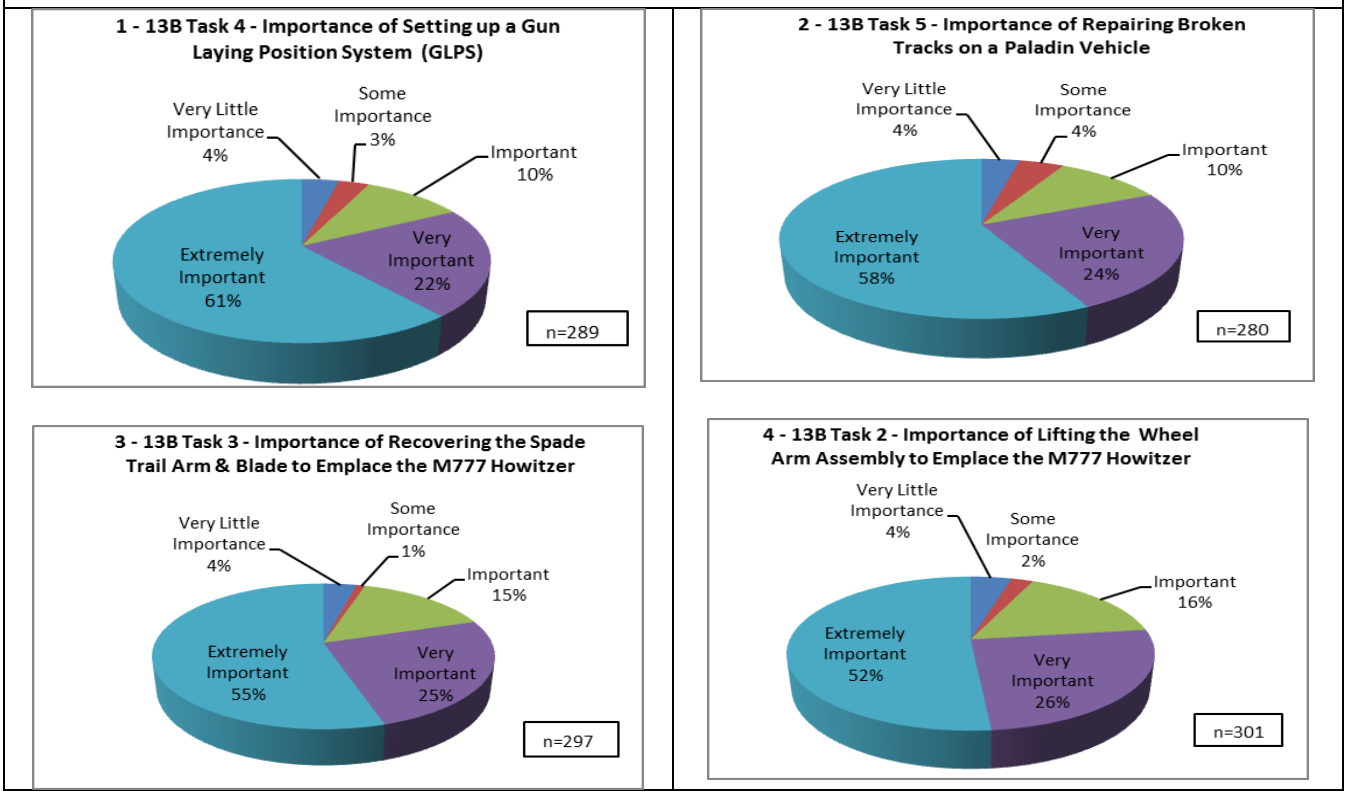
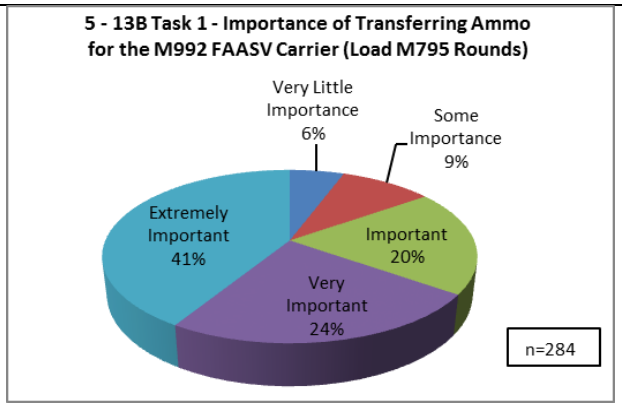


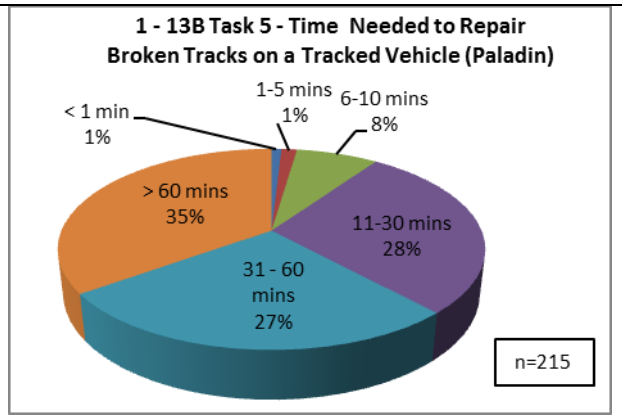
Figure 14. Continued

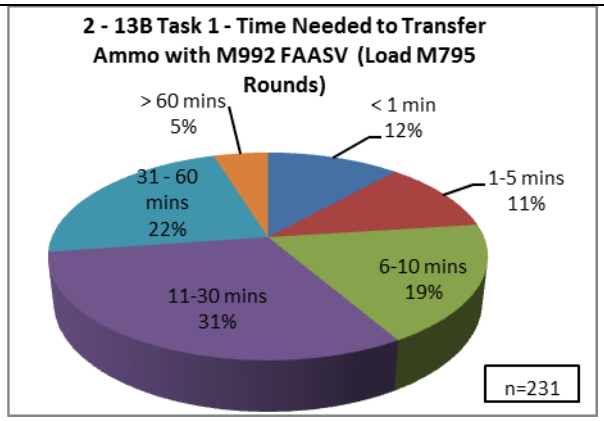


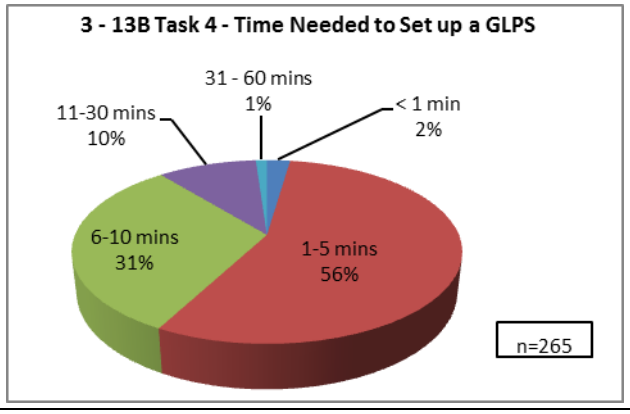
4.3. The Rated Time Each 13B-Specific Task Takes to Perform

Tasks with the same ranking numbers (i.e., with the same number on the far left in the chart title) do not statistically differ from each other. So in Figure 15, both the tasks numbered "4" are rated as taking about the same amount of time to complete.

Figure 15. The rated time each 13B-specific task takes to perform







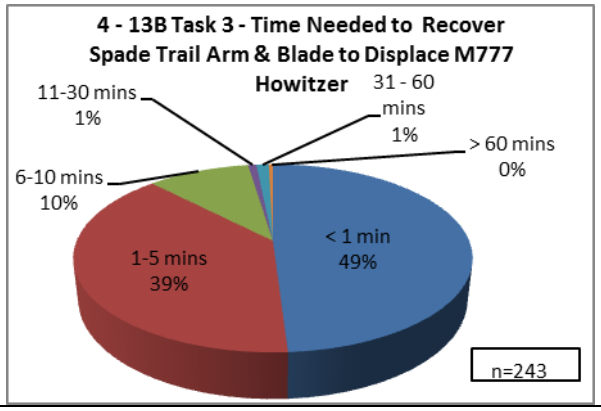
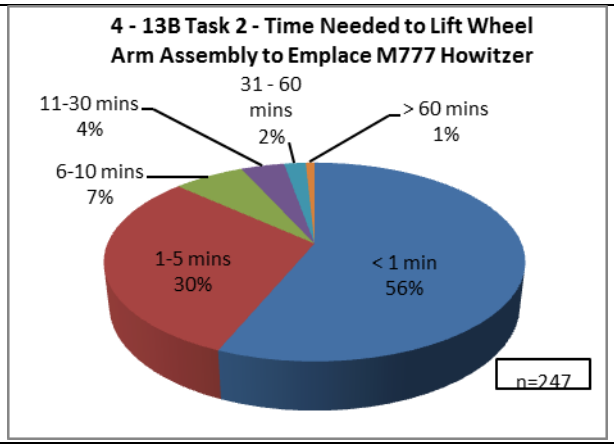


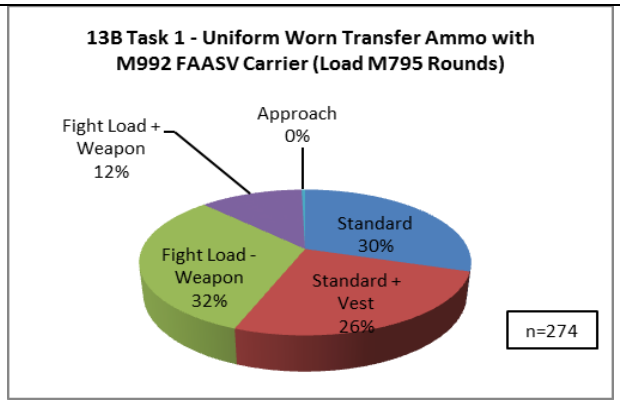
Figure 15. Continued

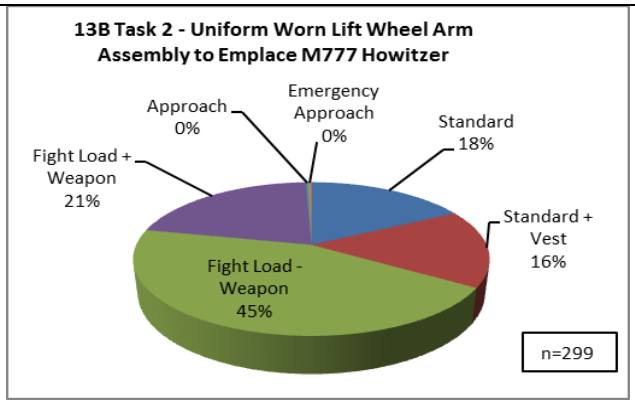


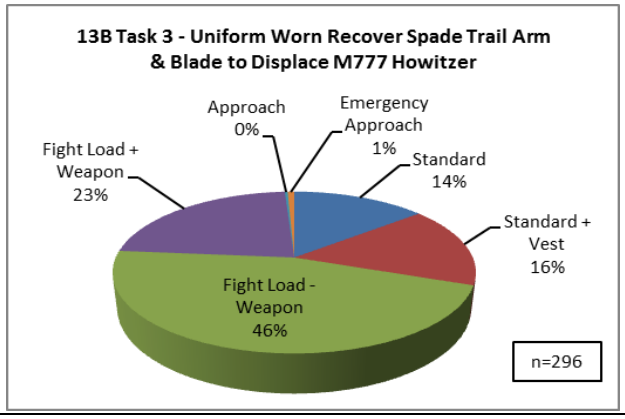
4.4. Uniforms Worn for Each 13B-Specific Task

Response options for these questions were 1) Standard Uniform, 2) Standard Uniform with Vest, 3) Fighting Load Minus Weapon, 4) Fighting Load with Weapon, 5) Approach March Load, and 6) Emergency Approach March Load. Data representing the response options for each 13B-specific task is displayed in Figure 16.

Figure 16. Uniforms worn for each 13B-specific task







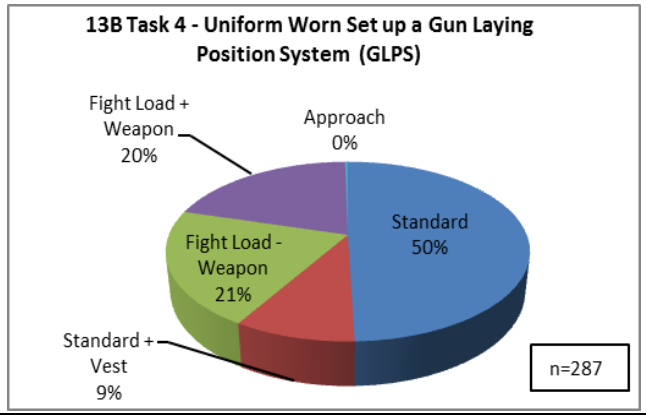
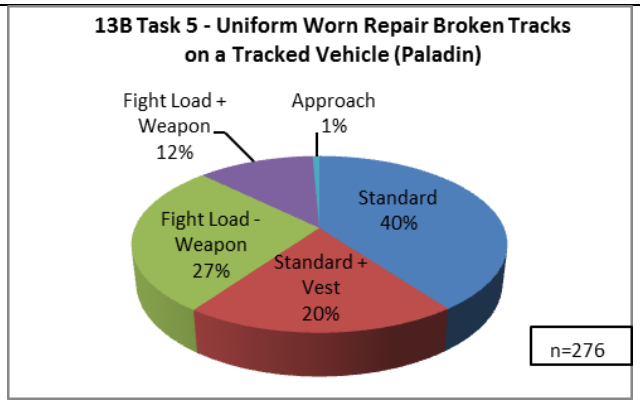


Figure 16. Continued



Section 5: 13B-Specific Task Supplemental Information

Following is information obtained from cannon crewmembers by a second set of job-related questions on the 13B-Specific Task JAQ. These questions were asked to gain a more complete picture of some of the tasks addressed in the previous portions of the questionnaire.

5.1. Time, Quantity and Distance Pertaining to Cannon Crewmember Tasks

Loading M795 HE Rounds: Three questions were asked in this section. The first question, using a fixed-response format, asked: How many M795 HE rounds do you typically carry from a resupply location and load onto an M992 FAASV? Figure 17 displays the responses to this question. An additional two questions were asked in this section using an open response format: 2) When you carried M795 HE rounds from a resupply location and loaded them on an M992 FAASV, what is the smallest number of rounds you loaded? 3) What is the greatest number of rounds you loaded? Table 17 displays data representing the answers to these two questions.

Figure 17. Number of M795 HE rounds carried from a resupply point and loaded on an M992 FAASV

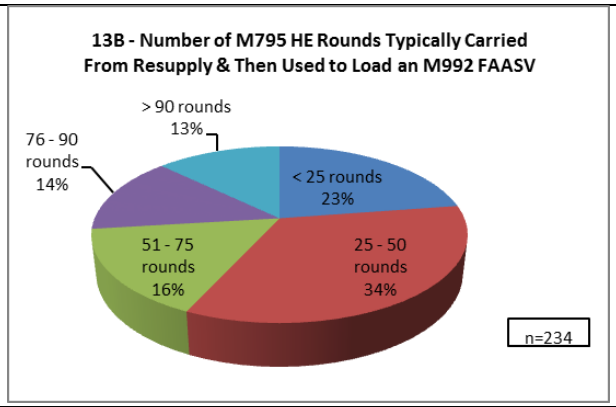


Table 17. Number of M795 HE rounds loaded onto an M992 FAASV

Number of Rounds Loaded	Mean	Median	Mode	SD
Smallest number (n=215)	28.1	10.0	10	78.7
Greatest number (n=221)	96.8	85.0	90	159.7

Fire Missions Using the M777 Howitzer: Five questions were asked in this section. Two of the questions using fixed-response formats asked: 1) In the past two years, how often have you performed multiple round fire missions using the M777 Howitzer? 2) While performing a fire mission using the M777 Howitzer, how many rounds do you usually fire? Figure 18 displays the responses to these two questions. An additional three questions were asked pertaining to fire missions with the M777 Howitzer using an open response format: 3) When using the M777 Howitzer, what is the smallest number of rounds you fired continuously? 4) What is the greatest number of rounds you fired continuously? 5) What is the greatest number of rounds fired in a 24 hour period? Table 18 summarizes the responses to these three questions.

Figure 18. Frequency of performing multiple round fire missions using an M777 howitzer and the number of rounds fired

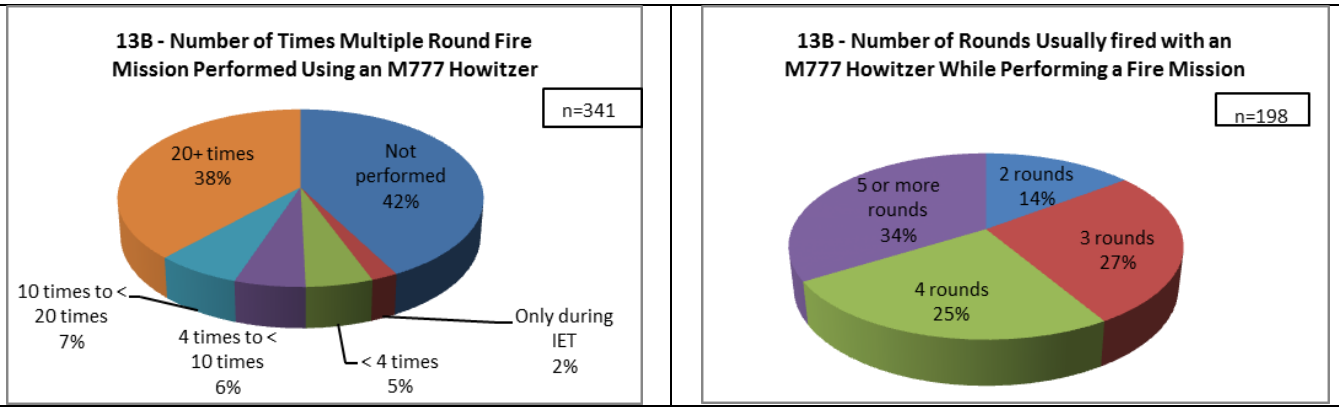


Table 18. Numbers of rounds fired using an M777 howitzer

Number of Rounds Loaded	Mean	Median	Mode	SD
Smallest Number Fired Continuously (n=190)	2.9	2.0	1	7.8
Greatest Number Fired Continuously (n=189)	21.9	12.0	10	45.2
Greatest Number Fired in a 24-Hour Period (n=183)	114.7	90.0	100	109.6

Section 6: Ratings of the 13B-Specific and Common Tasks, Combined Together

In order to directly compare 13B-Specific and common tasks and provide the most useful information to Army decision makers, data from both the 13B-Specific and common task JAQ's were combined for analysis. This may be considered an unorthodox procedure, because these two surveys were completed by two different sets of respondents; USARIEM researchers have no way of knowing how many respondents completed both surveys. However, any subject completing both surveys would not have provided duplicate task information, since no task was represented on both of these surveys. The analyses presented below comparing both 13B-Specific and common tasks should be considered with caution, and statistical differences between these two groups of tasks should be evaluated with less confidence than what would be typical. Tables 19 through 22 display the reported frequencies, expectations of performance, importance to job success, and time needed to perform the 20 common and job-specific tasks addressed by cannon crewmembers in this study.

Table 19. How often each common and 13B-specific tasks were performed by 13Bs in the last two years

Task and Statistical Rank[1]	Mean	SD	n
Common Tasks			
1. Perform a dismounted foot march of tactical movement	3.7	1.3	295
2. Use a shovel or entrenching tool to fill sandbags when preparing to build a fighting position	3.1	1.4	266
2. Lift and carry sandbags to an emplacement location and build a fighting position	3.0	1.4	269
4. Lift and drag a casualty to a safe location as quickly as possible	2.7	1.1	274
6. Lift and carry ammunition cans from the supply point to the back of a BFV	2.3	1.7	295
6. With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV, or Stryker from a towing vehicle to the disabled vehicle	2.2	1.1	286
6. Throw a hand grenade	2.2	0.9	151
7. Climb over, through, or around barbed wire obstacles	1.9	1.0	197
7. Jack up a vehicle and remove lug nuts from a flat tire	1.9	1.0	284
7. Manually tighten the lug nuts on a tire with a lug or torque wrench	1.9	1.0	289
8. With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	1.7	0.8	289
9. As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	1.7	0.8	287
10. With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle	1.4	0.7	270
11. While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures	1.1	0.6	297
11. With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV	1.1	0.4	296
13B-Specific Tasks			
2. Set up a GLPS	2.9	1.6	335
2. Lift Wheel Arm Assembly to emplace an M777 Howitzer	2.8	1.8	332
3. Recover Spade Trail Arm and Blade to displace an M777 Howitzer	2.8	1.7	331
5. Transfer ammunition with an M992 FAASV Carrier (loading M795 HE rounds)	2.6	1.5	306
7. Repair broken tracks on a tracked vehicle such as a Paladin	1.9	1.1	308

[1] An ANOVA and Duncan's multiple-range post-hoc tests were used to statistically differentiate between items in this table. Tasks are ranked in order of descending reported frequency. Task means can range from one to five, with higher means reflecting more frequent performance.Tasks with the same ranking numbers (i.e., the same preceding numbers on the far left) do not statistically differ from each other. For example, all the tasks numbered "2" in this table are performed at about the same rate of frequency. For this frequency analysis, the response option "I have only performed this task during Initial Entry Training" was removed so that the response options reflect an ordinal continuum.

Table 20. Ratings of the extent to which each 13B-Specific and common task was expected to be performed by cannon crewmembers

Task[1]	Yes, I am Expected to Perform this task	No, I am Not Expected to Perform this task
1) Lift and drag a casualty to safe location as quickly as possible (n=297)	90%	10%
1) Perform a dismounted foot march or tactical movement (n=299)	87%	13%
1) Lift a Wheel Arm Assembly to emplace an M777 Howitzer (n=340)	87%	13%
1) Recover a Spade Trail Arm and Blade to displace an M777 Howitzer (n=341)	86%	14%
1) Set up a GLPS (n=341)	84%	16%
1) Use a shovel or entrenching tool to fill sand bags when preparing to build a fighting position (n=301)	84%	16%
1) Repair broken tracks on a tracked vehicle such as a Paladin (n=342)	82%	18%
2) Transfer ammunition with an M992 FAASV (Load M795 HE rounds) (n=341)	81%	19%
2) Lift and carry sandbags to an emplacement location and build a fighting position (n=301)	77%	23%
3) Jack up a vehicle and remove lug nuts from a flat tire (n=301)	64%	36%
3) Throw a hand grenade (n=297)	63%	37%
3) Manually tighten the lug nuts on a tire with a lug or torque wrench (n=300)	62%	38%
3) With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV, or Stryker from a towing vehicle to the disabled vehicle (n=301)	62%	38%
3) With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle (n=301)	61%	39%
3) As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle (n=298)	53%	47%
4) With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle (i.e., BFV or Stryker) (n=301)	46%	54%
4) Lift and carry ammunition cans from the supply point (e.g., ammunition center or truck) to the back of a BFV (n=299)	45%	55%
4) Climb over, through, or around barbed wire obstacles (n=299)	41%	59%
5) While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures (n=296)	10%	90%
5) With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV (n=299)	7%	93%

[1] Tasks with the same ranking numbers (i.e., with the same numbers on the far left of the listed tasks) do not statistically differ from each other.

Table 21. Cannon crewmember's rated importance of each common and 13B-Specific tasks

Task and Statistical Rank[1]	Mean	SD	n
Common Tasks			
1. Lift and carry ammunition cans from the supply point to the back of a BFV	4.1	1.2	136
3. Perform a dismounted foot march of tactical movement	3.7	1.2	261
3. With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV, or Stryker from a towing vehicle to the disabled vehicle	3.6	1.1	183
3. Lift and carry sandbags to an emplacement location and build a fighting position	3.6	1.2	230
3. Use a shovel or entrenching tool to fill sandbags when preparing to build a fighting position	3.6	1.3	252
4. With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle	3.5	1.3	137
4. Manually tighten the lug nuts on a tire with a lug or torque wrench	3.4	1.1	187
4. Jack up a vehicle and remove lug nuts from a flat tire	3.4	1.1	191
5. Lift and drag a casualty to a safe location as quickly as possible	3.4	1.4	272
5. With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	3.4	1.1	182
5. With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV	3.3	1.4	24
6. While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures	3.3	1.3	34
7. As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	3.2	1.1	162
8. Climb over, through or around barbed wire obstacles	3.1	1.1	125
9. Throw a hand grenade	2.7	1.2	191
13B-Specific Tasks			
1. Set up a GLPS	4.3	1.1	289
1. Repair broken tracks on a tracked vehicle such as a Paladin	4.3	1.0	280
1. Recover Spade Trail Arm and Blade to displace an M777 Howitzer	4.3	1.0	297
1. Lift Wheel Arm Assembly to emplace an M777 Howitzer	4.2	1.1	301
2. Transfer ammunition with an M992 FAASV (loading M795 HE rounds)	3.9	1.2	284

[1] An ANOVA and Duncan's multiple-range post-hoc tests were used to statistically differentiate between items in this table. Tasks are ranked in order of descending rated importance. Task means can range from one to five, with higher means reflecting higher rated importance.Tasks with the same ranking numbers (i.e., the same preceding numbers on the far left) do not statistically differ from each other. For example, all the tasks numbered "1" in this table were rated at about the same level of importance.

Table 22. Cannon crewmembers' rated time to complete each common and 13B-Specific task

Task and Statistical Rank[1]	Mean	SD	n
Common Tasks			
1. Perform a dismounted foot march of tactical movement	5.6	0.7	260
3. Use a shovel or entrenching tool to fill sandbags when preparing to build a fighting position	4.1	1.6	252
3. Lift and carry sandbags to an emplacement location and build a fighting position	4.0	1.6	230
4. Jack up a vehicle and remove lug nuts from a flat tire	3.4	1.0	192
4. With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	3.3	1.1	183
5. While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures	2.9	1.2	32
5. Lift and carry ammunition cans from the supply point to the back of a BFV	2.9	1.5	134
5. Manually tighten the lug nuts on a tire with a lug or torque wrench	2.9	1.0	187
5. As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	2.8	1.1	162
5. With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle	2.8	1.0	185
7. Climb over, through, or around barbed wire obstacles	2.3	0.9	125
7. With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle	2.2	0.8	137
8. With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV	2.0	0.9	21
9. Lift and drag a casualty to a safe location as quickly as possible	1.9	0.8	272
11. Throw a hand grenade	1.2	0.7	189
13B-Specific Tasks			
2. Repair broken tracks on a tracked vehicle such as a Paladin	4.8	1.1	215
4. Transfer ammunition with an M992 FAASV (loading M795 HE rounds)	3.6	1.4	231
6. Set up a GLPS	2.5	0.7	265
10. Recover Spade Trail Arm and Blade to displace an M777 Howitzer	1.7	0.8	243
10. Lift Wheel Arm Assembly to emplace an M777 Howitzer	1.7	1.0	247

[1] An ANOVA and Duncan's multiple-range post-hoc tests were used to statistically differentiate between items in this table. Tasks are ranked in order of descending rated amount of time needed for the task. Task means can range from one to six, with higher means reflecting higher rated amounts of time needed to perform the tasks. Tasks with the same ranking numbers (i.e., the same preceding numbers on the far left) do not statistically differ from each other. For example, both the tasks numbered "3" in this table were rated as needing about the same amount of time to complete.

Section 7: Ratings of the 13F-Specific Tasks

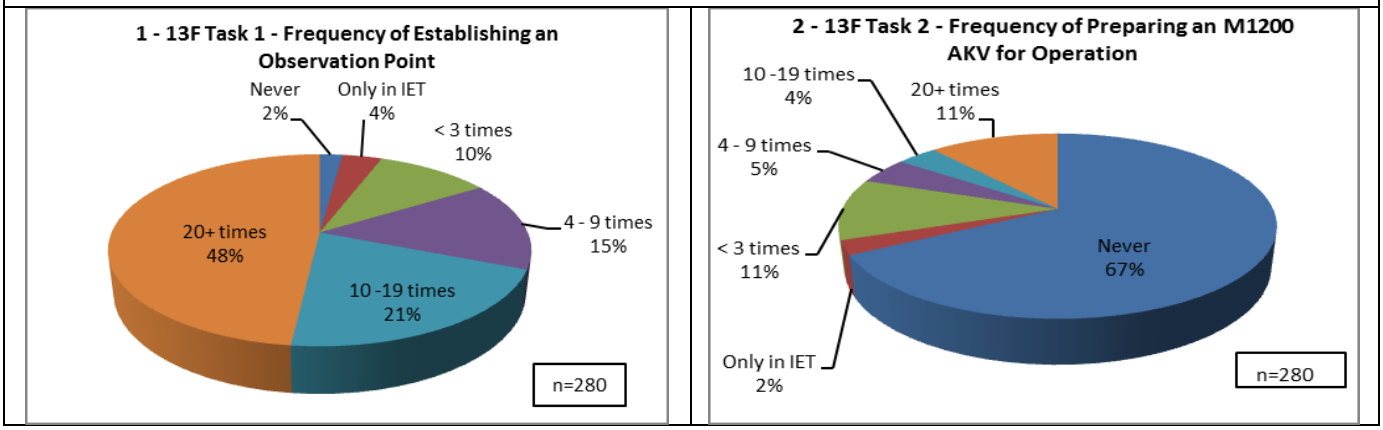
In the following pages, the results are summarized in terms of

- how often each 13F-specific task was performed in the last two years,
- extent to which each job-specific task in the 13F-Specific JAQ was expected to be performed,
- rated importance of each 13F-specific task,
- rated time each 13F -specific task takes to perform, and
- uniforms worn for each 13F-specific task.

7.1. How Often Each of the Two 13F-Specific Tasks Was Performed by Fire Support Specialists in the Last Two Years

In this section, Figure 19 displays the frequency data for the tasks addressed by the JAQ that are specific to the 13F MOS.

Figure 19. Frequencies of each of the two 13F-specific tasks performed by fire support specialists in the last two years



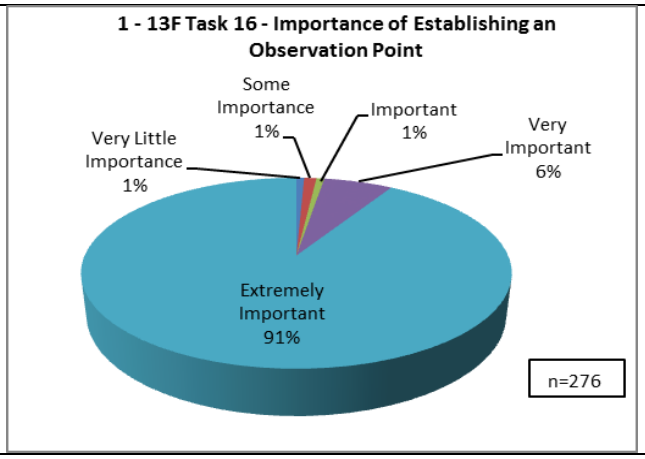
For the two job-specific tasks represented by the 13F-Specific JAQ, respondents were asked whether they were expected to complete the task if the situation arises. Table 23 displays the responses to this question for each of the tasks included on the 13F-Specific JAQ.

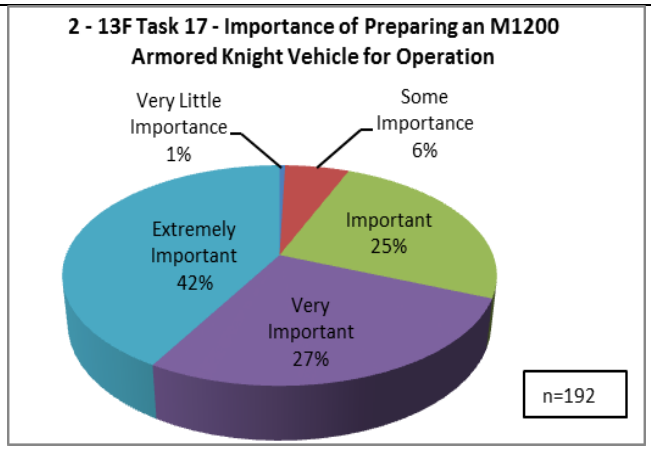
Table 23. The extent to which each of the two 13F-specifc tasks were expected to be performed		
13F-Specific Task	**Yes, I am expected to perform this task**	**No, I am not expected to perform this task**
1) Establish an observation point (n=281)	99%	1%
2) Prepare an M1200 AKV for operation (n=281)	68%	32%

7.2. The Rated Importance of Each 13F-Specific Task

Figure 20 below displays the ratings of importance for the tasks addressed by the JAQ that are specific to the 13F MOS.

Figure 20. The rated importance of the two 13F-specific tasks

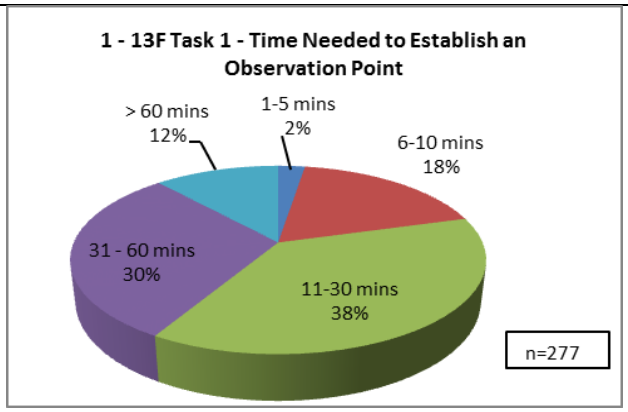


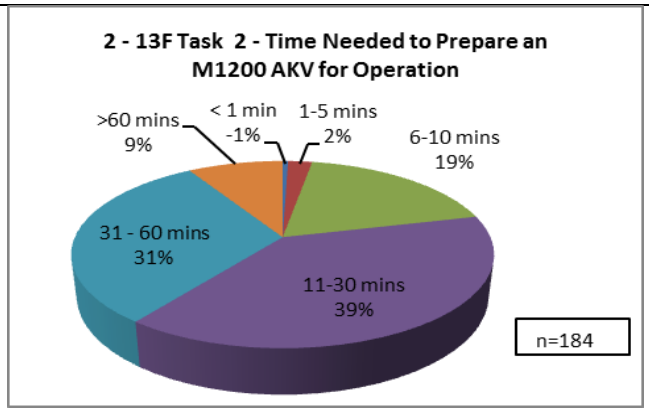


7.3. The Rated Time Taken to Perform Each 13F-Specific Task

Figure 21 below displays the ratings of time needed for the tasks addressed by the JAQ that are specific to the 13F MOS.

Figure 21. The amount of time needed to perform both of the 13F-specific tasks

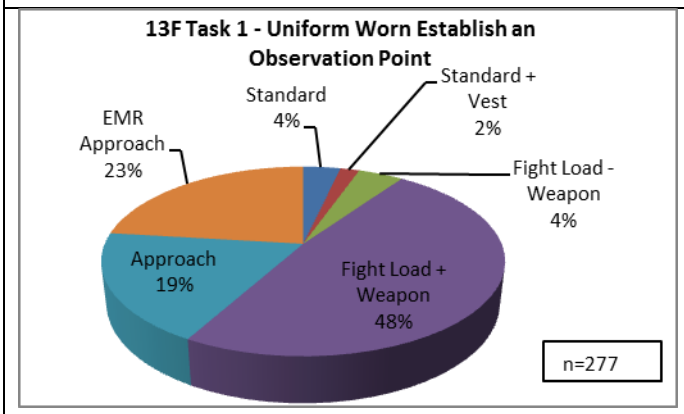


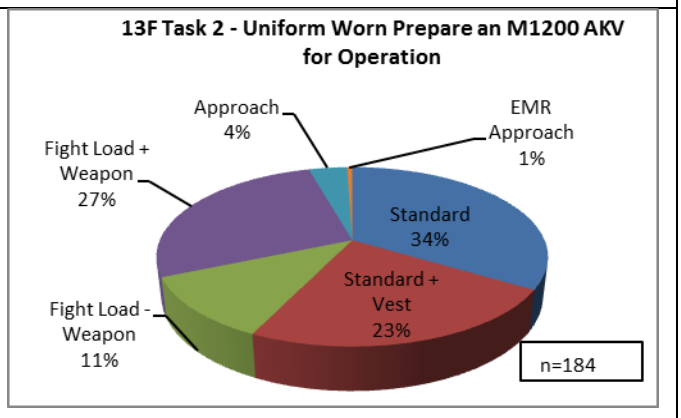


7.4. Uniforms Worn for Each 13F-Specific Task

Response options for the questions represented in Figure 22 were: 1) Standard Uniform, 2) Standard Uniform with Vest, 3) Fighting Load Minus Weapon, 4) Fighting Load with Weapon, 5) Approach March Load, and 6) Emergency Approach March Load. Data representing the response options for each common task is displayed in Figure 22.

Figure 22. Uniforms worn to perform both of the 13F-specific tasks





Section 8: Ratings of the 13F-Specific and Common Tasks, Combined Together

Tables 24 thorugh 27 display the reported frequencies, expectation of performance, importance to job success, and time needed to perform the 15 common and two job-specific tasks addressed by field artillery fire support specialists in this study.

Table 24. How often common and 13F-specific tasks were performed by field artillery fire support specialists in the last two years

Task and Statistical Rank[1]	Mean	SD	n
Common Tasks			
1. Perform a dismounted foot march or tactical movement	4.2	1.2	274
2. Lift and drag a casualty to a safe location as quickly as possible	2.7	1.1	248
3. Use a shovel or entrenching tool to fill sandbags when preparing to build a fighting position	2.5	1.1	226
3. Lift and carry sandbags to an emplacement location and build a hasty fighting position	2.4	1.1	235
4. Throw a hand grenade	2.3	0.8	159
4. Climb over, through, or around barbed wire obstacles	2.3	1.0	156
5. With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle	2.0	1.0	268
5. Lift and carry ammunition cans from the supply point to the back of a BFV	1.9	1.3	259
5. With assistance from another Soldier, lift, carry and install the barrel of a 25mm gun onto a BFV	1.8	1.4	259
5. Manually tighten the lug nuts on a tire with a lug or torque wrench	1.8	0.9	274
5. Jack up a vehicle and remove lug nuts from a flat tire	1.8	0.8	269
6. While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire procedures	1.7	1.2	262
7. With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	1.6	0.8	270
8. As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	1.6	0.7	267
9. With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle	1.6	0.8	266
13F-Specific Tasks			
1. Establish an observation point	4.1	1.1	270
5. Prepare an M1200 AKV for operation	1.8	1.4	273

[1] An ANOVA and Duncan's multiple-range post-hoc tests were used to statistically differentiate between items in this table. Tasks are ranked in order of descending reported frequency. Task means can range from one to five, with higher means reflecting more frequent performance.Tasks with the same ranking numbers (i.e., the same preceding numbers on the far left) do not statistically differ from each other. For example, both of the tasks numbered "1" in this table are performed at about the same rate of frequency. For this frequency analysis, the response option "I have only performed this task during Initial Entry Training" was removed so that the response options reflect an ordinal continuum.

Table 25. Ratings of the extent to which each 13F-specific and common tasks were expected to be performed by field artillery fire support specialists

Task[1]	Yes, I am Expected to Perform this task	No, I am Not Expected to Perform this task
1) Establish an observation point (n=281)	99%	1%
1) Perform a dismounted foot march or tactical movement (n=281)	99%	1%
2) Lift and drag a casualty to safe location as quickly as possible (n=281)	92%	8%
3) Climb over, through, or around barbed wire obstacles (n=207)	80%	20%
3) Use a shovel or entrenching tool to fill sand bags when preparing to build a fighting position (n=281)	77%	23%
3) Throw a hand grenade (n=280)	76%	24%
3) With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle (i.e., BFV or Stryker) (n=280)	74%	26%
3) Lift and carry sandbags to an emplacement location and build a hasty fighting position (n=280)	71%	29%
4) Prepare an M1200 AKV for operation (n=281)	68%	32%
4) With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle (n=278)	64%	36%
5) Jack up a vehicle and remove lug nuts from a flat tire (n=278)	58%	42%
5) Lift and carry ammunition cans from the supply point (e.g., ammunition center or truck) to the back of a BFV (n=277)	55%	45%
5) Manually tighten the lug nuts on a tire with a lug or torque wrench (n=279)	55%	45%
5) With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle (n=280)	54%	46%
5) With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV (n=280)	53%	47%
5) As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle (n=279)	50%	50%
5) While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures (n=280)	50%	50%

[1] Tasks with the same ranking numbers (i.e., with the same numbers on the far left of the listed tasks) do not statistically differ from each other.

Table 26. Field artillery fire support specialists' rated importance of each common and 13F-specific task to job success

Task and Statistical Rank[1]	Mean	SD	n
Common Tasks			
2. Perform a dismounted foot march or tactical movement	4.6	0.7	276
4. While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire procedures	3.7	1.1	138
4. With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV	3.5	1.2	152
4. With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle	3.5	1.2	207
5. Lift and carry ammunition cans from the supply point to the back of a BFV	3.4	1.2	154
5. With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle	3.3	1.2	178
5. Use a shovel or entrenching tool to fill sandbags when preparing to build a fighting position	3.3	1.2	216
6. Lift and carry sandbags to an emplacement location and build a hasty fighting position	3.2	1.1	198
7. Lift and drag a casualty to a safe location as quickly as possible	3.1	1.3	259
7. Climb over, through or around barbed wire obstacles.	3.1	1.2	164
8. Jack up a vehicle and remove lug nuts from a flat tire	3.0	1.2	162
8. Throw a hand grenade	3.0	1.2	215
9. With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	2.9	1.1	151
10. Manually tighten the lug nuts on a tire with a lug or torque wrench	2.8	1.1	152
11. As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	2.7	1.0	136
13F-Specific Tasks			
1. Establish an observation point	4.9	0.5	276
3. Prepare an M1200 AKV for operation	4.0	1.0	192

[1] An ANOVA and Duncan's multiple-range post-hoc tests were used to statistically differentiate between items in this table. Tasks are ranked in order of descending rated importance. Task means can range from one to five, with higher means reflecting higher rated importance.Tasks with the same ranking numbers (i.e., the same preceding numbers on the far left) do not statistically differ from each other. For example, all three of the tasks numbered "4" in this table were rated at about the same level of importance.

Table 27. Field artillery fire support specialists' rated time that each common and 13F-specific task takes to perform

Task and Statistical Rank[1]	Mean	SD	n
Common Tasks			
1. Perform a dismounted foot march of tactical movement	5.8	0.7	276
3. Use a shovel or entrenching tool to fill sandbags when preparing to build a fighting position	4.1	1.4	216
4. Lift and carry sandbags to an emplacement location and build a hasty fighting position	3.9	1.3	199
5. Jack up a vehicle and remove lug nuts from a flat tire	3.5	1.0	163
6. With assistance from another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	3.2	1.0	151
7. With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle	2.9	0.9	178
7. Manually tighten the lug nuts on a tire with a lug or torque wrench	2.8	0.9	150
7. As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	2.7	1.0	137
8. While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures	2.6	0.9	136
9. With assistance from another Soldier, lift, carry and install the barrel of a 25mm Gun onto a BFV	2.5	1.0	146
9. Lift and carry ammunition cans from the supply point to the back of a BFV	2.4	0.9	152
10. Climb over, through or around barbed wire obstacles.	2.2	0.9	165
11. With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle	2.1	0.8	206
12. Lift and drag a casualty to a safe location as quickly as possible	1.8	0.7	258
13. Throw a hand grenade	1.1	0.5	213
13F-Specific Tasks			
2. Establish an observation point	4.3	1.0	277
2. Prepare an M1200 AKV for operation	4.2	1.0	184

[1] An ANOVA and Duncan's multiple-range post-hoc tests were used to statistically differentiate between items in this table. Tasks are ranked in order of descending rated amount of time needed for the task. Task means can range from one to six, with higher means reflecting higher rated amounts of time needed to perform the tasks. Tasks with the same ranking numbers (i.e., the same preceding numbers on the far left) do not statistically differ from each other. For example, both the tasks numbered "2" in this table were rated as needing about the same amount of time to complete.

Section 9: Contrasting Time Spent Performing Tasks in Garrison and in Deployment Settings

9.1. Common Task JAQ.

The Common JAQ had only two items that provided a means to compare time spent conducting job-related tasks in garrison settings to time spent conducting similar tasks during combat deployments. However, these two items each contained seven sub-items addressing specific types of tasks (i.e., seated tasks, less active tasks, loading & unloading supplies and equipment, tactical marches/patrolling, MOS-specific tasks, physically demanding combat arms tasks, and physical training). Cannon Crewmembers completing the Common Task JAQ were asked to provide estimates of the percentages of time they spent performing each of these types of tasks in both garrison/training and combat settings. Results addressing tasks performed in garrison or training settings were compared to those pertaining to tasks conducted during combat deployments.

Table 28 displays the results of the comparative analysis. Soldiers in the 13B MOS reported spending a greater percentage of their time performing MOS-specific tasks in garrison and training settings (16% more) than they did during combat deployments. However, they said they spent well over twice as much time (145% more) performing tactical foot marches and walking patrols during combat deployments. This sample reported spending more time performing seated and less active tasks in garrison and training settings than during deployment but also reported performing more physical readiness training (35% more) in non-deployed settings.

Table 28. Mean estimates of time spent by 13B's performing different types of tasks in both garrison or training settings and combat deployments

Type of Task[1]	In Garrison or Training	During Combat Deployment	Percentage Trend from Person to Person
Seated tasks (clerical duties, classroom- or computer-based training)	18.3%	7.1%	158% more time in garrison/training settings
Physical Training	17.9%	13.3%	35% more time in garrison/training settings
MOS-Specific Tasks (i.e., tasks that only Soldiers in your MOS perform)	22.6%	19.5%	16% more time in garrison/training settings
Less Active Tasks (vehicle maintenance, driving, cleaning, charge of quarters or guard)	13.3%	12.0%	11% more time in garrison/training settings
Loading/Unloading Supplies and Equipment	6.9%	9.6%	39% more time during combat deployments
Physically Demanding Combat Arms Tasks (i.e., tasks common to many combat arms MOS's)	13.5%	19.9%	47% more time during combat deployments
Tactical marches/patrolling	7.6%	18.6%	145% more time during combat deployments

[1] n=301

9.2. 13B-Specific JAQ.

Only two items on the 13B-Specific JAQ provide a means to compare time spent conducting job-related tasks in garrison settings to time spent conducting similar tasks during combat deployments. These two items were as follows: Item 39: "During a typical week in garrison (or training weekend for AR/NG), what percentage of your time do you spend performing Cannon Crewmember tasks (i.e., transferring ammo, lifting the wheel arm assembly, recovering the space trail arm and blade, etc.)?" Item 40: "During your last combat deployment, what percentage of your time did you spend performing Cannon Crewmember tasks (i.e., firing the M777, lifting the wheel arm assembly, recovering the space trail arm and blade, etc.)?" Item responses ranged from less than 25% of the time to over 75% of the time.

Figure 23 illustrates the data gathered from these two items, and Table 29 displays the results of the comparative analysis. Referring to Table 28, these results appear to vary slightly from those obtained from the 13B respondents completing the Common Task JAQ (cf. Table 28). Whereas the Common Task

JAQ results indicate that cannon crewmembers performed MOS-specific tasks slightly more often (i.e., 16% more) in garrison settings, responses to items 39 and 40 of the 13B-Specific JAQ seem to indicate that cannon crewmember tasks were performed slightly more frequently during combat deployments. Referring to Table 29, thirty-six percent of the sample who completed the 13B-Specific JAQ indicated that they spent more of their time performing cannon crewmember tasks during their last combat deployment than they did in garrison, whereas only slightly over 28% responded they spent more time performing MOS-specific tasks in garrison than during their last combat deployment.

Figure 23. Percentage of time spent performing cannon crewmember tasks during garrison and deployment

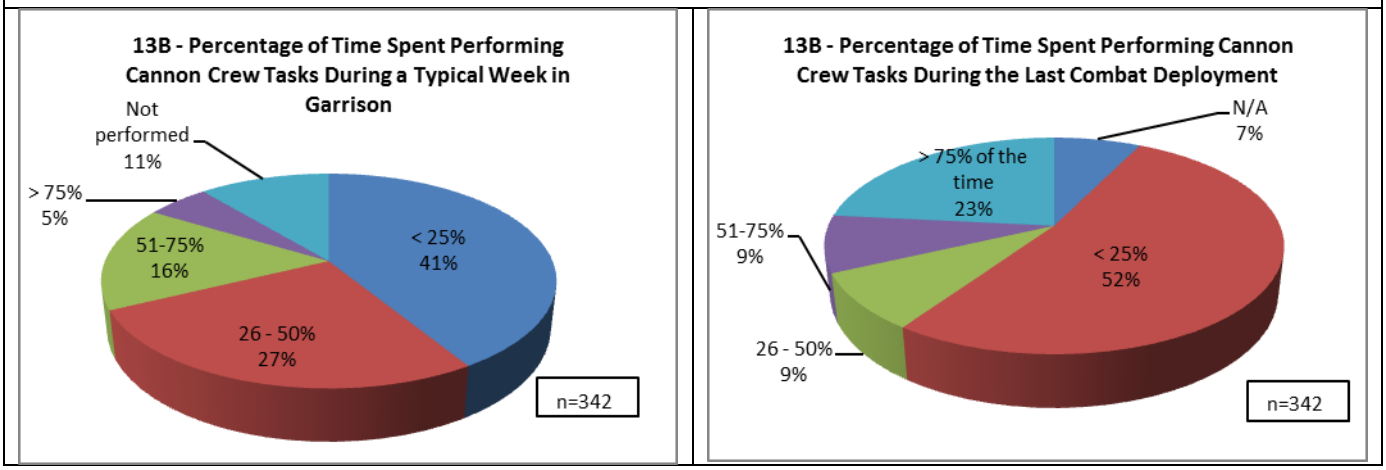


Table 29. Comparing time spent by cannon crewmembers performing MOS-specific tasks in garrison and deployment settings

Comparison of Time Estimates from Setting to Setting	n[1]	Percentage of Respondents
51 - 100 percentage points higher for last combat deployment	31	11.2%
26 – 75 percentage points higher for last combat deployment	32	11.5%
1 - 50 percentage points higher for last combat deployment	37	13.3%
About the same in both settings	99	35.6%
1 - 50 percentage points higher for garrison settings	45	16.2%
26 – 75 percentage points higher for garrison settings	25	9.0%
51 - 100 percentage points higher for garrison settings	9	3.2%

[1] Total n = 278 cannon crewmembers who completed the 13B-Specific JAQ

9.3. 13F-Specific JAQ.

The 13F-Specific JAQ had the same two items and 14 sub-items (7 sub-items for each of the two items) to compare the settings in which various types of tasks were performed (i.e., garrison/training and deployment settings) as did the Common Task JAQ. For both garrison/training and deployment settings, Soldiers were asked to provide estimates of the percentages of time they spent conducting each of the following types of tasks: Seated tasks, less active tasks, loading & unloading supplies and equipment, tactical marches/patrolling, MOS-specific tasks, physically demanding combat arms tasks, and physical training. Results addressing tasks performed in garrison or training settings were compared to those pertaining to tasks conducted during combat deployments.

Table 30 displays the results of this comparative analysis. Soldiers in the 13F MOS said they spent nearly twice as much time (97% more) performing tactical foot marches and walking patrols during combat deployments than they did in garrison and training settings. It appears that this large a difference in foot marches and walking patrols from one type of setting to the other may well be increasing the risk that several of these soldiers will experience some type of musculoskeletal injury. This sample reported spending somewhat more time performing seated and less active tasks in garrison and training locations than during deployment but they also said they spent more time in these venues performing physical readiness training. Notably, these Soldiers reported spending only slightly more time performing MOS-specific tasks during combat deployments than in garrison or training settings (10% more).

Table 30. Mean estimates of time spent by 13F's performing different types of tasks in both garrison or training settings and combat deployments

Type of Task[1]	In Garrison or Training	During Combat Deployment	Percentage Trend from Person to Person
Seated tasks (clerical duties, classroom- or computer-based training)	24.1%	15.0%	61% more time in garrison/training settings
Physical Training	15.5%	11.0%	41% more time in garrison/training settings
Less Active Tasks (vehicle maintenance, driving, cleaning, charge of quarters or guard)	10.4%	8.7%	20% more time in garrison/training settings
MOS-Specific Tasks (i.e. tasks that only Soldiers in your MOS perform)	21.0%	23.2%	10% more time during combat deployments
Physically Demanding Combat Arms Tasks (i.e. tasks common to many combat arms MOS's)	13.1%	15.0%	15% more time during combat deployments
Loading/Unloading Supplies and Equipment	5.6%	7.0%	25% more time during combat deployments
Tactical marches/patrolling	10.3%	20.3%	97% more time during combat deployments

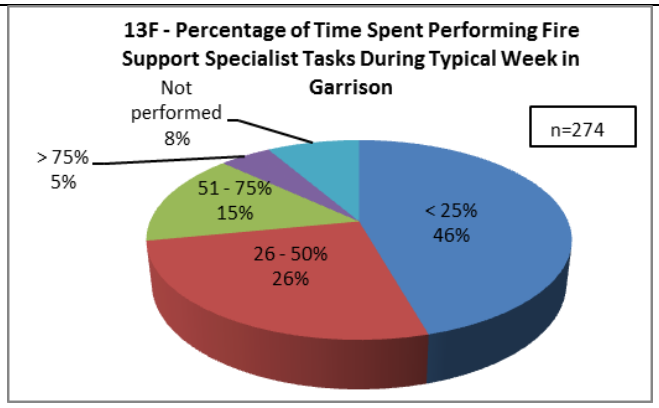
[1] n=255

Two other items on the 13F-Specific JAQ provide a means to compare time spent conducting job-related tasks in garrison settings to time spent conducting similar tasks during combat deployments. These two items were as follows: Item 100: "During a typical week in garrison (or training weekend for AR/NG), what percentage of your time do you spend performing Fire Support Specialist tasks (i.e., establishing an observation point, preparing an M1200 Armored Knight Vehicle for operation, etc.)?" Item 101: "During your last combat deployment, what percentage of your time did you spend performing Fire Support Specialist tasks (i.e., establishing an observation point, preparing an M1200 Armored Knight Vehicle for operation, etc.)?" Item responses ranged from less than 25% of the time to over 75% of the time.

Figure 24 illustrates the data gathered from these two items, and Table 31 displays the results of the comparative analysis. Consistent with the results shown in Table 30, these findings appear to indicate that fire support specialists spend more time conducting job-specific tasks during combat deployments than in garrison settings. Referring to Table 30, 84% of the relevant sample (i.e. those who had deployed

at least once since 09 SEP 2001) completing the two items on the 13F-Specific JAQ indicated they spent more time performing fire support specialist tasks during their last combat deployment than they did in garrison. Conversely, only 6% said they spent more time performing MOS-specific tasks in garrison than during their last combat deployment.

Figure 24. Percentage of time spent performing fire support specialist tasks during garrison and deployment



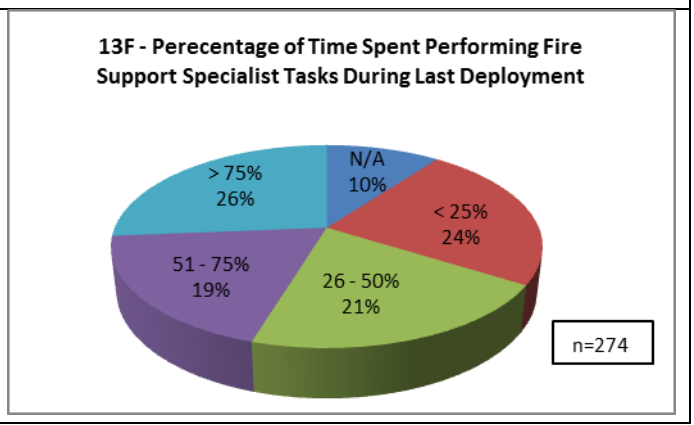


Table 31. Comparing time spent by fire support specialists performing MOS-specific tasks in garrison and deployment settings

Comparison of Time Estimates from Setting to Setting	n[1]	Percentage of Respondents
51 - 100 percentage points higher for last combat deployment	16	9.8%
26 – 75 percentage points higher for last combat deployment	57	34.8%
1 - 50 percentage points higher for last combat deployment	64	39.0%
About the same in both settings	17	10.4%
1 - 50 percentage points higher for garrison settings	7	4.3%
26 – 75 percentage points higher for garrison settings	3	1.8%
51 - 100 percentage points higher for garrison settings	0	0%

[1]Total n = 164 deployed fire support specialists who completed all relevant items of the 13F-Specific JAQ

Section 10: Comparing Subjects Who Had Been Deployed to Those Who Had Not Deployed

Another set of analyses that can be used to obtain understanding concerning differences in performance from one work setting to another is to compare the work performance of Soldiers who had been deployed to those who had not been deployed. Much more information from the three JAQ's can be

included using this strategy, but this set of analyses is also limited in that nearly all the Soldiers in the three survey samples had been deployed. The results from these analyses are provided, however, because they may be useful to decision and policy makers.

10.1. 13B's.

The comparisons of participants who had deployed at least once to those who had not on aspects of the 20 common and 13B-specific tasks (e.g., the likelihood of being expected to perform the tasks if the situation arose, the numbers of times the tasks were performed, their importance to job success, the time to needed to perform them one time, and other supplemental information concerning the tasks) are reported in Tables 32, 33 and 34. Only the statistically significant comparisons are reported in these three tables.

- Completion of four of the 20 common and 13B-specific tasks was more likely to be expected of cannon crewmembers who had deployed one or more times if the situation arose. Conversely, only one of the 20 tasks (i.e., while seated, remove and lift/lower the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire precedures) was more likely to be expected of Soldiers in the 13B MOS who had not deployed.
- Five of the 20 tasks (e.g., with assistance, pulling a casualty from a cammander's seat and through the top hatch of a wheeled vehicle; setting up a GLPS) were reported to have been performed more frequently by respondents who had deployed at least once. In contrast, two of the tasks (e.g., lifting, carrying and installing the barrel of a 25mm gun onto a BFV) had been performed more frequently by non-deployed subjects.
- Soldiers who had deployed rated four of the tasks (e.g., setting up a GLPS; recovering a Spade Trail Arm and Blade to displace an M777 Howitzer) as more important to job success than non- deployed subjects. None of the tasks were rated as more important to job success by those who had not deployed.

- Non-deployed Soldiers rated three of the tasks (e.g., lifting a wheel arm assembly to emplace an M777 Howitzer) as taking more time to complete than those who had deployed. Only one of the tasks (i.e., performing a dismounted foot march or tactical movement) was rated as taking more time to complete by Soldiers who had deployed.
- Soldiers who had deployed reported longer maximum distances for dismounted tactical movements, and carrying heavier maximum loads during dismounted tactical movements of six miles or more, than non-deployed Soldiers. Conversely, non-deployed Soldiers reported a greater percentage of 20-plus mile road marches than Soldiers who had deployed.

10.2. 13F's.

The comparisons of Soldiers in the 13F MOS who had deployed at least once to those who had not, on aspects of the 17 total common and 13F-specific tasks, are reported in Tables 35, 36 and 37. Only the statistically significant comparisons are reported in these three tables.

- Completion of four of the 17 common and 13F-specific tasks (e.g., lifting and carrying sandbags to an emplacement location and building a hasty fighting position; climbing over, through, or around barbed wire obstacles) were more likely to be expected of field artillery fire support specialists who had deployed one or more times if the situation arose. In contrast, none of these 17 tasks were more likely to be expected of Soldiers in the 13F MOS who had not deployed.
- Five of the 17 tasks (e.g., performing a dismounted foot march or tactical movement; climbing over, through, or around barbed wire obstacles) were reported to have been performed more frequently by field artillery fire support specialists who had deployed at least once. None of these 17 tasks were reported to have been performed more frequently by non-deployed Soldiers in the 13F MOS.
- Only one of the 17 tasks (i.e., as part of a group of 4 Soldiers, removing the flat tire from a HMMWV, then rolling and lifting it into the back of a vehicle) were rated as more important

to job success by those who had deployed, and none were rated as more important by non-deployed Soldiers in the 13F MOS.

- No statistically significant differerences were found between deployed and non-deployed Soldiers in the 13F MOS concerning time needed to complete any of the 17 tasks.
- Soldiers who had deployed reported longer maximum distances for dismounted tactical movements, and carrying heavier maximum loads during these movements, than non-deployed Soldiers. In contrast, Soldiers who had not deployed reported longer minimum distances for dismounted tactical movements than those who had.

Table 32. Others' expectations of subject task completion: statistically significant chi-squared tests with deployed and non-deployed respondents who completed the common or 13B-Specific task JAQ

	Deployed		**Non-Deployed**				
Task	**Yes (%)**	**n**	**Yes (%)**	**n**	**Chi-Squared**	***p***	**Summary**
Throw a hand grenade	64.6	274	40.9	22	4.9	.027	Respondents who deployed were more likely to be expected to perform this task as part of their MOS.
Use a shovel or entrenching tool to fill sand bags when preparing to build a fighting position	85.3	278	63.3	22	7.0	.008	Respondents who deployed were more likely to be expected to perform this task.
Set up GLPS	85.2	318	65.2	23	6.3	.012	Respondents who deployed were more likely to be expected to perform this task.
Repair broken tracks on a tracked vehicle such as a Paladin	83.1	319	65.2	23	4.6	.032	Respondents who deployed were more likely to be expected to perform this task.
While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire precedures	7.7	273	31.8	22	13.8	<.001	Respondents who did ***not*** deploy were more likely to be expected to perform this task.

Table 33. Deployed vs. non-deployed respondents who completed the common or 13B-Specific task JAQ: task frequencies, task importance, time taken for the task, and supplementary task information

		Deployed			Non-Deployed				
Item Type	**Task**	**Mean**	**Mean Rank**	**n**	**Mean**	**Mean Rank**	**n**	**2-tailed *p***	**Summary**
Frequency	With the assistance of another Soldier, pull a casualty from a commander's seat and through the top hatch of a wheeled vehicle (i.e., BFV or Stryker)	1.4	137.2	249	1.2	107.8	20	.046	More frequently done among respondents who had deployed
	As part of a group of four Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	1.7	146.0	266	1.4	110.0	20	.037	More frequently done among respondents who had deployed
	Lift Wheel Arm Assembly to emplace an M77 Howitzer	2.9	169.8	310	2.0	120.5	22	.014	More frequently done among respondents who had deployed
	Recover Spade Trail Arm and Blade to displace an M777 Howitzer	2.8	168.8	310	2.1	125.2	21	.034	More frequently done among respondents who had deployed
	Set up GLPS	3.0	174.1	313	1.6	81.8	22	< .001	More frequently done among respondents who had deployed
	With assistance from another Soldier, lift, carry, and install the barrel of a 25mm gun onto a BFV	1.1	146.9	275	1.3	163.2	20	.025	More frequently done among respondents who had ***not*** deployed
	While seated, remove and lift/lower the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire precedures	1.1	147.2	274	1.5	165.3	22	.031	More frequently done among respondents who had ***not*** deployed
Importance	With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle		94.0	168		61.3	14	.021	Deployed Soldiers rated this task as more important to job success than those who had not deployed.
	Lift Wheel Arm Assembly to emplace an M777 Howitzer		153.3	284		112.3	17	.040	Deployed Soldiers rated this task as more important to job success than those who had not.

Table 33. Continued

		Deployed			Non-Deployed				
Item Type	**Task**	**Mean**	**Mean Rank**	**n**	**Mean**	**Mean Rank**	**n**	**2-tailed *p***	**Summary**
Importa-nce	Set up a GLPS		147.1	275		104.3	14	.032	Deployed Soldiers rated this task as more important to job success than those who had not.
	Recover Spade Trail Arm and Blade to displace an M777 Howitzer		153.0	279		87.5	18	.001	Deployed Soldiers rated this task as more important to job success than those who had not.
Time	Perform a dismounted foot march or tactical movement		132.6	238		100.9	21	.019	Deployed Soldiers rated this task as taking more time to complete than those who had not deployed.
	Lift Wheel Arm Assembly to emplace an M777 Howitzer		121.4	234		174.7	13	.006	Non-deployed Soldiers rated this task as taking more time to complete than those who had deployed.
	Recover Spade Trail Arm and Blade to displace an M777 Howitzer		119.1	228		166.8	15	.005	Non-deployed Soldiers rated this task as taking more time to complete than those who had.
	Set up a GLPS		130.7	254		186.1	11	.009	Non-deployed Soldiers rated this task as taking more time to complete than those who had deployed.
Supplem-entary	How long does it usually take you to fill enough sandbags to build one fighting position?		133.9	246		95.1	16	.037	Soldiers who had deployed reported taking more time to fill enough sandbags to build one fighting postion than non-deployed Soldiers.
	How long does it usually take you to perform a dismounted tactical movement of at least 6 miles while carrying a load of 100 lbs or more?		91.2	174		127.6	12	.006	Non-deployed Soldiers reported taking more time to perform a dismounted tactical movement of at least 6 miles while carrying a load of 100+ lbs. than those who had deployed.

Table 34. Deployed vs. non-deployed respondents who completed the common or 13B-Specific task JAQ: supplementary information items with open response formats - statistically significant t-tests

	Deployed			Non-Deployed					
Task	**Mean**	**SD**	**n**	**Mean**	**SD**	**n**	**t**	**2-tailed *p***	**Summary**
When you carried M795 HE rounds from a resupply location and loaded them on an M992 FAASV, what is the greatest number of rounds you loaded?	20.3	30.6	201	73.6	118.3	13	-4.6	<.001	Non-deployed Soldiers reported carrying and loading a greater maximum number of M795 HE rounds onto an M992 FAASV than Soldiers who had deployed.
What percentage of the time does your unit march over 20 miles during training road marches?	1.4	9.2	266	7.6	24.9	21	-2.5	.013	Non-deployed Soldiers reported a greater percentage of 20+ mile road marches than Soldiers who had deployed.
When you performed a dismounted tactical movement, what is the longest distance you moved?	10.6	6.5	236	6.2	4.9	15	2.6	.010	Soldiers who had deployed reported longer maximum distances for dismounted tactical movements than non-deployed Soldiers.
When you performed a dismounted tactical movement of 6 miles or more, what is the heaviest load you carried?	70.0	33.1	227	44.2	23.9	15	3.0	.003	Soldiers who had deployed reported carrying heavier maximum loads on dismounted tactical movements of 6 miles or more than non-deployed Soldiers.

Table 35. Others' expectations of subject task completion: statistically significant chi-squared tests with deployed and non-deployed respondents who completed the 13F-Specific JAQ

	Deployed		Non-Deployed				
Task	**Yes (%)**	**n**	**Yes (%)**	**n**	**Chi-Squared**	***p***	**Summary**
Lift and carry sandbags to an emplacement location and build a hasty fighting position	73.6	254	50.0	26	6.4	.011	Soldiers in the 13F MOS who had deployed were more likely to be expected to lift and carry sandbags to an emplacement location and build a hasty fighting position than those who had not.
Climb over, through or around barbed wire obstacles	83.5	188	47.4	19	14.2	<.000	Respondents who deployed were more likely to be expected to perform this task
With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle	66.7	252	42.3	26	6.1	.014	Respondents who deployed were more likely to be expected to perform this task
As part of a group of 4 Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	51.8	253	30.8	26	4.2	.041	Respondents who deployed were more likely to be expected to perform this task

Table 36. Deployed vs. non-deployed respondents who completed the 13F-Specific JAQ: task frequencies, task importance, time taken for the task, and supplementary task information

		Deployed			Non-Deployed				
Item Type[1]	**Task**	**Mean**	**Mean Rank**	**n**	**Mean**	**Mean Rank**	**n**	**2- tailed *p***	**Summary**
Frequency	Climb over, through or around barbed wire obstacles	2.3	80.6	147	1.6	43.7	9	.012	More frequently done among respondents who had deployed
	With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV or Stryker from a towing vehicle to the disabled vehicle	2.1	139.3	243	1.4	87.5	25	.001	More frequently done among respondents who had deployed
	With the assistance of another Soldier, remove a spare tire from a HMMWV, roll into place, and lift onto the axle of the disabled vehicle	1.7	140.1	245	1.2	90.4	25	.001	More frequently done among respondents who had deployed
	As part of a group of 4 Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	1.6	137.0	242	1.3	104.6	25	.025	More frequently done among respondents who had deployed
	Perform a dismounted foot march or tactical movement	4.2	140.5	251	3.7	104.7	23	.018	More frequently done among respondents who had deployed
Importance	As part of a group of 4 Soldiers, remove the flat tire from a HMMWV, then roll and lift it into the back of a vehicle	70.4	70.4	128	2.0	38.9	8	.021	Soldiers who had deployed rated this task as more important to job success than those who had not
Supplemen-tary	When fully supplying one BFV, what is the total number of 25mm ammunition cans you usually carry from a supply point to the vehicle?	39.0	39.0	73	3.3	56.7	7	.030	Soldiers who had ***not*** deployed carried more ammunition cans from a supply point to the vehicle than those who had.

[1] Time items had no differences in times that were statistically different

Table 36. Continued[1]

		Deployed			Non-Deployed				
Item Type[1]	**Task**	**Mean**	**Mean Rank**	**n**	**Mean**	**Mean Rank**	**n**	**2- tailed *p***	**Summary**
Supplemen-tary	When you changed a section of track on a vehicle, how many other Soldiers usually helped you perform the task?	3.6	56.8	101	2.4	22.0	7	.003	Soldiers who had deployed had more Soldiers helping them perform this task than those who had not deployed.
	When you performed a dismounted tactical movement, how heavy was the load you usually carried?	2.6	130.2	234	2.2	96.2	20	.039	Soldiers who had deployed reported carrying more weight during dismounted tactical movements than those who had not.

[1] Time items had no differences in times that were statistically different

Table 37. Deployed vs. non-deployed respondents who completed the 13F-Specific JAQ: supplementary information items with open response formats - statistically significant t-tests

	Deployed			Non-Deployed					
Item	**Mean**	**SD**	**n**	**Mean**	**SD**	**n**	**t**	**2-tailed *p***	**Summary**
When you changed a section of track on a vehicle, what is the smallest number of Soldiers who helped you perform the task?	1.9	1.0	101	0.9	0.9	7	2.7	.009	Soldiers who had deployed had a larger minimum number of Soldiers helping them perform this task than non-deployed Soldiers.
What percentage of the time does your unit march 10 to 12 miles during training road marches (based on a year of road marches)?	20.8	22.1	249	11.6	18.2	25	2.0	.045	Soldiers who had deployed reported a greater percentage of 10 to 12 mile road marches than those who had not deployed.
When you performed a dismounted tactical movement, what was the longest distance you moved?	14.2	7.8	231	10.3	7.5	19	2.0	.033	Soldiers who had deployed reported longer maximum distances for a dismounted tactical movement than non-deployed Soldiers.
When you performed a dismounted tactical movement, what was the heaviest load you carried?	104.5	31.7	231	85.0	30.0	19	2.6	.010	Soldiers who had deployed reported carrying heavier maximum loads during a dismounted tactical movement than Soldiers who had not.
When you observed a casualty being dragged while under fire, what percentage of the time were they dragged by a single individual?	42.3	34.4	106	18.5	26.2	20	2.9	.004	Soldiers who had deployed reported greater percentages of time seeing casualties being dragged under fire by a single individual than non-deployed Soldiers.
When you observed a casualty being dragged while under fire, what percentage of the time were they dragged by a two-person team?	41.7	34.3	106	16.5	23.5	20	3.1	.002	Soldiers who had deployed reported greater percentages of time seeing casualties being dragged under fire by a two-person team than non-deployed Soldiers.

Table 37. Continued

	Deployed			Non-Deployed					
Item	**Mean**	**SD**	**n**	**Mean**	**SD**	**n**	**t**	**2-tailed *p***	**Summary**
When you carried 25mm ammo cans from a supply point to a BFV as part of resupplying one vehicle, what is the smallest number of cans you ever personally carried?	1.9	1.6	69	3.9	4.2	7	-2.5	.014	Non-deployed Soldiers reported carrying a greater minimum number of 25mm ammo cans as part of resupplying one vehicle than Soldiers who had deployed.
When you carried 25mm ammo cans from a supply point to a BFV, what is the shortest distance you ever carried them (in yards)?	12.2	10.7	69	28.7	37.1	7	-2.6	.006	Respondents who had ***not*** deployed reported longer minimum distances carrying 25mm ammo cans from a supply point to a BFV than those who had.
When you performed a dismounted tactical movement, what was the shortest distance you moved?	1.9	1.4	222	3.0	1.9	19	-3.1	.002	Soldiers who had ***not*** deployed reported longer minimum distances for a dismounted tactical movement than those who had.

Section 11: The Effect of Task Completion Expectations on Task Performance Frequency

Task expectations were strongly related to the frequency with which the tasks in this study was performed. Task performance expectations were associated with more frequent performance for 21 of the 22 tasks represented in the three JAQ's administered in this study. These analyses are summarized in Table 38.

Table 38. The effects of task completion expectations on task performance frequency: all three JAQ's (i.e., the common, 13B-Specific and 13F-Specific JAQ's)

	Task	Cramer's V	Range of Cramer's V[3]	Summary
Common and 13B-Specific (3 highest Cramer's V's)[1]	Lift and carry ammunition cans from the supply point (e.g., ammunition center of truck) to the back of a BFV (n = 294)	.92	.22 - .92	Each of the common and 13B-specific tasks was likely to be performed more frequently by a Soldier when the Soldier said he was expected to perform that task when the situation arose. This relationship was strongest for the three common tasks listed above.
	With assistance from another Soldier, lift, carry, and install the barrel of a 25mm gun onto a BFV (n = 295)	.84		
	With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV, or Stryker from a towing vehicle to the disabled vehicle (n = 286)	.76		
Common and 13F-Specific (3 highest Cramer's V's)[2]	Perform a dismounted foot march or tactical movement (n = 274)	.81	.12 - .81	Fourteen of the 15 common tasks and both of the two 13F-specific tasks were likely to be performed more frequently by a Soldier when the Soldier said he was expected to perform that task when the situation arose. This relationship was strongest for the three common tasks listed above.
	With a group of Soldiers, lift, carry and connect a vehicle tow bar for a Buffalo, BFV, or Stryker from a towing vehicle to the disabled vehicle (n = 266)	.65		
	With assistance from another Soldier, lift, carry, and install the barrel of a 25mm gun onto a BFV (n = 258)	.59		

[1] Nineteen of the 20 Cramer's V coefficients for the task analyses are significant at the .001 level. The coefficient representing the analysis for the remaining task is significant at the .004 level.

[2] Fifteen of the 17 Cramer's V coefficients for the task analyses are significant at the .001 level. Of the two coefficients representing the analyses for the remaining tasks, one is significant at the .006 level; the other is non-significant at the .05 level.

[3] The range of Cramer's V represents the five 13B-specific, 15 13B common, two 13F-specific, and 15 13F common tasks.

Section 12: The Number of Tasks Performed in the Last Two Years

Based on these survey results, a significant percentage of both cannon crewmembers and field artillery fire support specialists had not once in the last two years performed some of the tasks addressed - not even in their initial entry training. For example, 94% of the 13Bs said they had not in the last two years carried and installed the barrel of a 25mm gun onto a BFV with assistance, and 40% reported not repairing broken tracks on a tracked vehicle such as a Paladin during the same time period. Sixty-eight percent of the 13Fs said they had not, in the last two years, removed and lifted/lowered the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance and/or remedial action misfire procedures.

Sixty-seven percent of the 13F's reported not preparing an M1200 AKV for operation in the last two years, and 35% said they had not pulled a casualty through the top hatch of a wheeled vehicle over the same time period. Finally, considering both cannon crewmembers and fire support specialists, 20 of these Soldiers (i.e., 3.4% of the 580 participants who responded to this question) said they had not performed a dismounted foot march or tactical movement even once in the last two years. Perhaps these latter respondents were on medical restrictions (i.e., "profiles") when their units conducted movements of this type – it seems highly unlikely that their units would not have conducted a dismounted foot march or tactical movement even once over an entire two-year period. The graphs of task performance frequencies in Results Sections 2, 4 and 7 display the data indicating how often each common and job-specific task was completed (and not completed) in the two years prior to the surveys. However, a notable statistic that these graphs don't show is the total number of these tasks that were performed (and not performed) by respondents in the two prior years.

For each of the three JAQ's administered in this study, we conducted an analysis of the number of tasks represented by the survey that each of the respondents performed. Tables 39 through 41 display the numbers of both common and MOS-specific tasks reported to be performed by cannon crewmembers and fire support specialists in the last two years.

Tables 39 and 40 indicate that over half the cannon crewmembers completing the Common Task JAQ (i.e., 54.5%) performed only eight or fewer of the 15 common tasks represented by the questionnaire, and nearly a third (i.e., 32.9%) of the cannon crewmembers completing the 13B-Specific JAQ performed only two or fewer of the five job-specific tasks represented by that survey. Further, Table 41 indicates that over half the fire support specialist sample completing the 13F-Specific JAQ (i.e., 56.6%) performed only 10 or fewer of the 17 common and MOS-specific tasks represented by that questionnaire. Thus it appears that among both cannon crewmembers and fire support specialists, a large percentage of the respondents have not even once in the last two years performed many of the tasks represented in the JAQ's administered in this study.

Table 39. The number of common tasks performed by cannon crewmembers in the last two years

Number of Tasks	Number of Respondents	Percentage	Cumulative Percentage
0	7	2.3	2.3
1	5	1.7	4.0
2	3	1.0	5.0
3	16	5.3	10.3
4	18	6.0	16.3
5	29	9.6	25.9
6	24	8.0	33.9
7	29	9.6	43.5
8	33	11.0	54.5
9	27	9.0	63.5
10	34	11.3	74.8
11	25	8.3	83.1
12	31	10.3	93.4
13	14	4.7	98.0
14	4	1.3	99.3
15	2	0.7	100
Total	**301**	**100**	

Table 40. The number of job-specific tasks performed by cannon crewmembers in the last two years

Number of Tasks	Number of Respondents	Percentage	Cumulative Percentage
0	7	2.0	2.0
1	41	11.8	13.9
2	66	19.1	32.9
3	117	33.8	66.8
4	38	11.0	77.7
5	77	22.3	100
Total	**346**	**100**	

Table 41. The number of common and job-specific tasks performed by fire support specialists in the last two years

Number of Tasks	Number of Respondents	Percentage	Cumulative Percentage
0	2	0.7	0.7
1	2	0.7	1.4
2	6	2.1	3.6
3	8	2.8	6.4
4	12	4.3	10.7
5	16	5.7	16.4
6	23	8.2	24.6
7	22	7.8	32.4
8	19	6.8	39.1
9	22	7.8	47.0
10	27	9.6	56.6
11	21	7.5	64.1
12	35	12.5	76.5
13	16	5.7	82.2
14	19	6.8	89.0
15	10	3.6	92.5
16	11	3.9	96.4
17	10	3.6	100
Total	**281**	**100**	

Section 13: Deployed Soldiers Who Performed MOS-Specific Tasks in the Field but Not in Garrison

A number of cannon crewmembers and fire support specialists who had deployed at least once said that they had performed MOS-specific tasks in the field *but not in garrison*. Among the 312 cannon crewmembers who said they had deployed in two questions on the 13B-Specific JAQ and also performed one or more MOS-specific tasks in the prior two years, nine of them (2.9% of these deployed respondents) reported not having performed any of these tasks in a garrison setting. Seven of these nine respondents even said they performed these MOS-specific tasks *over 75% of the time during their last deployment.* Another 22 reported spending less than 25% of their time performing MOS-specific tasks during their last combat deployment, but no time performing these tasks in garrison. A response of less than 25% for this question could equate to zero and thus, it is uncertain how many of these latter respondents actually performed MOS-specific tasks during their last combat deployment. Table 42 displays the amounts of time spent by these 31 total respondents performing MOS-specific tasks during their last combat deployment.

Among the 177 fire support specialists who said they had deployed in two questions on the 13F-Specific JAQ and also performed one or a maximum of two of the MOS-specific tasks represented in the questionnaire in the prior two years, eight (5% of these deployed respondents) reported not having performed any of these tasks in a garrison setting. Table 43 displays the amounts of time spent by these respondents performing MOS-specific tasks during their last combat deployment.

Table 42. Percentage of time spent performing job-specific tasks during their last deployment by cannon crewmembers who had not performed these tasks in garrison

Percentage of Time Spent	**Number of Respondents[1]**	**Percentage**
Less than 25%	22	71.0
26 – 50%	2	6.4
Over 75%	7	22.6
Total	**31**	**100**

[1]Ten percent of 312 deployed cannon crewmembers are represented in this table.

Table 43. Percentage of time spent performing job-specific tasks during their last deployment by fire support specialists who had not performed these tasks in garrison		
Percentage of Time Spent	**Number of Respondents[1]**	**Percentage**
Less than 25%	1	12.5
26 – 50%	5	62.5
51 – 75%	1	12.5
Over 75%	1	12.5
Total	**8**	**100**

[1]Five percent of 177 deployed fire support specialists are represented in this table.

Section 14: Comparisons of JAQ Ratings to Judgments of Subject Matter Experts

As part of the larger study conducted with TRADOC to develop physical performance standards for the Army's most physically demanding jobs, researchers from USARIEM obtained information on the critical tasks performed by cannon crewmembers and fire support specialists from 20 subject matter experts (SMEs). These SMEs had served in several capacities in relation to the MOS's being addressed (e.g., officers, warrant officers or non-commissioned officers in the MOS for at least 12 of the past 24 months and deployed within the past 24 to 36 months; some also serving as battalion- and/or company-level leaders).

14.1. Comparing the Ratings of SMEs and Cannon Crewmembers.

When asked to identify the critical physically-demanding tasks of the cannon crewmember MOS, the 20 SMEs selected the following tasks:

- Performing a dismounted tactical movement
- Dragging a casualty to a safe location
- Evacuating a casualty from the top of a vehicle
- Using a hand grenade
- Filling and carrying sandbags to prepare a fighting position
- Removing a feeder assembly from a BFV
- Loading ammunition cans onto a BFV

- Transferring ammunition with an M992 FAASV (loading M795 HE rounds)
- Lifting a wheel arm assembly to emplace an M777 Howitzer
- Recovering a spade trail arm and blade to displace an M777 Howitzer
- Setting up a GLPS

Similarities and differences (i.e., mixed results) were noted between the tasks selected as critical by the SMEs and those rated as highly important by the cannon crewmembers completing the JAQ. Response options for the importance scale items on each of the JAQs administered in this study (for both cannon crewmembers and fire support specialists) ranged from 1 ("of little importance") to 5 ("extremely important"). A rating of "4" was labeled on the JAQ as "very important;" and thus a mean of at least "4" was used as the criterion indicating an agreement between the job incumbents and SMEs that a job task was "critical," or highly important. Of the tasks selected by the SMEs, the four tasks also rated highly in importance on the 13B and Common Task JAQs were setting up a GLPS (mean = 4.33), recovering a spade trail arm and blade to displace an M777 Howitzer (mean = 4.27), lifting a wheel arm assembly to emplace an M777 Howitzer (mean = 4.18), and loading ammunition cans onto a BFV (mean of 4.07).

Notably, eight tasks selected as critical by the SMEs were not rated as highly in importance by the JAQ respondents. These were (in decending order of rated importance) transferring ammunition with an M992 FAASV Carrier (loading M795 HE rounds) (mean = 3.86), performing a dismounted tactical movement (mean = 3.73), filling and carrying sandbags to prepare a fighting position (means = 3.60 for carrying and 3.55 for filling), evacuating a casualty from the top of a vehicle (mean = 3.47), dragging a casualty to a safe location (mean = 3.36), removing a feeder assembly from a BFV (mean = 3.26), and using a hand grenade (mean = 2.69). Repairing broken tracks on a tracked vehicle such as a Paladin was rated highly in importance on the JAQ (mean = 4.28) but not selected as critical by the SMEs.

14.2. Comparing the Ratings of SMEs and Fire Support Specialists.

The 20 SMEs selected the following common and MOS-specific tasks when asked to identify the critical physically-demanding tasks performed by fire support specialists:

- Performing a dismounted tactical movement
- Dragging a casualty to a safe location
- Evacuating a casualty from the top of a vehicle
- Using a hand grenade
- Filling and carrying sandbags to prepare a fighting position
- Removing a feeder assembly from a BFV
- Loading ammunition cans onto a BFV
- Establishing an observation point
- Preparing an M1200 AKV for operation

More differences than similarities were noted between the tasks selected as critical by the SMEs and those rated as highly important by the fire support specialists. Of the tasks rated as critical by the SMEs, those also rated highly in importance on the JAQ were the following (in decending order of rated importance): Establishing an observation point (mean = 4.86), performing a dismounted tactical movement (mean = 4.57), and preparing an M1200 Armored Knight Vehicle for operation (mean = 4.04).

Seven of the 10 tasks selected as critical by the SMEs were not rated as highly in importance by the JAQ respondents. These tasks were removing a feeder assembly from a BFV (mean = 3.63), evacuating a casualty from the top of a vehicle (mean = 3.50), loading ammunition cans on a BFV (mean = 3.35), filling and carrying sandbags to prepare a fighting position (means = 3.28 for filling and 3.20 for carrying), dragging a casualty to a safe location (mean = 3.10), and using a hand grenade (mean = 2.99).

14.3. Summary Comments Concerning the Rating Comparisons.

When comparing task importance ratings of the JAQ respondents to those tasks rated as critical by subject matter experts (i.e., those developing doctrine and training programs for the cavalry scout and armor crewman MOS's), it is important to note that respondents to the questionnaire were specifically instructed that not all tasks can be extremely important. Nonetheless, there appears to be a good deal of disagreement between 13 Series Soldiers (i.e., cannon crewmembers and fire support specialists) and

subject matter experts concerning what tasks are highly important to success in their MOS's. Several tasks identified as critical by the SMEs (e.g., filling and carrying sandbags, throwing hand grenades, and even performing a dismounted tactical movement and dragging a casualty to a safe location) were not rated as highly in importance by cannon crewmembers and/or fire support specialists on the JAQ. In addition, one of the tasks rated as highly important by cannon crewmembers (i.e., repairing broken tracks on a tracked vehicle such as a Paladin) was not selected as a critical task by the SMEs. These findings may be an indicator that one or both of these jobs (i.e., the cannon crewmember and/or fire support specialist job) may have changed to some extent, and this may have implications for the preparation, training and equipping of Soldiers. More will be said about this in the next section. Further, there may be job tasks or aspects of the ways these jobs are currently performed that were not considered by the SMEs.

Section 15: Comments Provided on the JAQ

Part of the purpose of this investigation was to ascertain whether there were any physically demanding tasks performed by cannon crewmembers or field artillery fire support specialists that were not identified or addressed on the JAQ or in the larger study conducted with TRADOC. Thus, both the cannon crewmembers and fire support specialists were asked to respond to the following item at the end of the JAQ: "If this survey has omitted physically demanding tasks that you believe all combat arms Soldiers should be capable of performing, please identify and explain these tasks in the space provided below. Please list any tasks you think are physically hard to perform and important." For a response to be considered as valid, it must have mentioned a specific task or tasks that was not or were not mentioned on the JAQ. Otherwise it was considered as irrelevant. Valid responses were collected from 252 cannon crewmembers and 80 field artillery fire support specialists. The following would be considered as examples of irrelevant responses: "None," "N/A," "Can't think of anything," comments addressing non-task related issues, and comments providing personal opinions of the questionnaire as a whole.

15.1. Comments Provided by Cannon Crewmembers (13Bs).

The only howitzer-related tasks specifically addressed in the JAQ pertained to the M777. However, Soldiers in the 13B MOS frequently mentioned that cannon crewmembers routinely work with other howitzers such as the M119A2/A3 and the M109A6. The following four tasks were mentioned frequently by respondents and relate specifically to howitzers: 1) Transporting howitzers (e.g., M777, M119A2/A3, M109A6) and corresponding components (e.g., base plates, spades, trails) with and without prime movers; 2) mounting/dismounting and emplacing/displacing howitzers and corresponding components (e.g., base plates, spades, trails); 3) loading/ramming and firing rounds in howitzers to perform special fire missions (e.g., high angle, gunner's quadrant, sweep-and-zone, out of traverse, action-azimuth), and 4) operating the hydraulic hand pump and hand wheel to reposition the howitzer and/or hand tube. Further, many respondents reported the following two tasks are often performed as part of their job duties: 1) Transferring ammunition to/from various locations and between equipment (e.g., ammunition supply points (ASPs), tactical vehicles, loading trays, ready racks, howitzers, and machine guns); and 2) performing special fire missions (e.g., high angle, gunner's quadrant, sweep-and-zone, out of traverse, action-azimuth). Table 44 displays more information concerning the comments that were provided by cannon crewmembers.

15.2 Comments Provided by Field Artillery Fire Support Specialists (13Fs).

The following two tasks were mentioned most frequently by fire support specialists: 1) Carrying additional gear such as forward observer (FO) and radio telephone operator (RTO) gear, along with additional Fire Support Team (FIST) equipment (e.g., lightweight laster designator rangefinder [LLDR], viper, infrared zoom laser illuminator designator [IZLID], OE-254 antennas, batteries, targeting equipment); and 2) performing rough ruck marches in full kit. Notably, the questionnaire did ask about performing dismounted foot marches or tactical movements from a broad perspective. Further, the questionnaire asked specifically about what uniform or equipment would usually be worn while performing the task (e.g., Standard Military Uniform, Fighting Load Minus Weapon, Fighting Load With

Weapon). However, the JAQ did not ask about additional equipment that could potentially be carried. Moreover, the respondents highlighted the fact that ruck marches are often performed through rough terrain, not flat land. This would make the task even more physically demanding in theater, particularly if Soldiers typically conducted ruck marches on relatively flat ground in garrison or training settings. In addition, two respondents referred to a specific piece of equipment – the fire support sensor system (FS3), that is mounted to an M1200 Armored Knight Vehicle (the M1200 AKV is mentioned in one of the JAQ's task statements) - which would increase the overall physical demands of preparing an AKV for operation. Table 45 displays more information concerning the comments that were provided by fire support specialists.

Table 44. Summary of comments provided on the JAQ completed by cannon crewmembers	
Topic Addressed	**Number of Comments (Not all represented)**
Howitzer-Specific Tasks • Transport howitzers (e.g., M777, M119A2/A3, M109A6) and corresponding components (e.g., base plates, spades, trails) with and without prime movers	38
• Mount/dismount and emplace/displace howitzers and corresponding components (e.g., base plates, spades, trails)	31
• Load/ram and fire rounds in howitzers (e.g., M777, M119A2/A3, M109A6)	19
• Operate hydraulic hand pump and hand wheel to reposition the howitzer and/or cannon tube	9
Transfer ammunition to/from ASP, tactical vehicles, loading trays, ready racks, howitzers, and machine guns	44
Perform special fire missions (e.g., high angle, gunner's quadrant, sweep-and-zone, out of traverse, action-azimuth missions)	29
Fully combat load/unload and transport necessary equipment (e.g., ammunition, powder cans, basic issue items (BII), propellants, fuse boxes) to/from tactical vehicles (e.g., light medium tactical vehicle [LMTV], medium tactical vehicle [MTV], family of medium tactical vehicles [FMTV], etc.)	13
General heavy lifting	12
Replace tires and spin/rotate the tube on M119	12
Airborne operations or Drop-Zone Missions	8
Tactical movement with ruck (*Addressed in JAQ*)	7
Lift firing platform onto M119A2/A3	6
Remove armor on M109A6 Paladin to service the engine or "pull the pack"	5
Operate, carry and transport machine guns, missile launchers, rocket systems, and grenade launchers	5
Number one man position cannon duties	4
Build fighting position (*Addressed in JAQ*)	3
Remove muzzle break on Paladin	3
Track maintenance on tracked vehicles	2
Punching the tube	2
All Valid Comments	**252**
24 irrelevant responses	

Table 45. Summary of comments provided on the JAQ completed by field artillery fire support specialists

Topic Addressed	**Number of Comments (Not all represented)**
Carry additional gear such as FO, RTOgear, and additional FIST equipment (e.g., LLDR, VIPER, IZLID, OE-254 antennas, batteries, targeting equipment)	21
Perform rough ruck marches in full kit (*Addressed in JAQ*)	21
Airborne and/or ranger operations	7
Establish, maintain and operate radio and wire transmission/communication	7
Strategically plan, call and execute fires	6
Carry, mount and assemble/disassemble machine guns	4
Establish and prepare observation points (*Addressed in JAQ*)	4
Perform Bradley gunner tasks (e.g., 249, 240, M2)	3
Build a fighting position (*Addressed in JAQ*)	3
Casualty evacuation and/or drag a casualty to immediate safety (*Addressed in JAQ*)	2
Mount/Dismount FS3from armored fighting vehicles (e.g., BFV, Stryker, M1200 AKV)	2
All Valid Comments	**80**
30 irrelevant responses	

Discussion

The purpose of this survey project was to gather various types of job-related information pertaining to the Army cannon crewmember and field artillery fire support specialist positions (MOS's 13B and 13F) from job incumbents. This information will be used to develop physical performance standards for these positions, with a view toward identifying and implementing two sets of proxy assessment tools (one for each MOS) that are effective in predicting performance on a subset of the tasks performed by cannon crewmembers and field artillery fire support specialists.

Most Frequently Performed and Most Important Tasks

The tasks reported by these JAQ respondents as the most frequently performed, and those that were rated as most important, are specified in this report. The top most frequently performed tasks were conducting dismounted foot marches and tactical movements, filling and carrying sandbags to build fighting positions, lifting and dragging casualties to safe locations as quickly as possible, establishing observation points, and setting up a GLPS. Tasks rated as more important to success in the cannon crewmember and fire support specialist positions were conducting dismounted foot marches and tactical movements, establishing observation points, setting up a GLPS, carrying ammunition cans to the backs of BFVs, repairing broken tracks on tracked vehicles, and preparing M1200 AKV for operation.

The tasks rated as most important to job success are to some extent those reported as the most frequently performed. However, for both the cannon crewmember and fire support specialist positions, certain tasks were indicated by the data as being more important but less frequently done. For cannon crewmembers, only one task fit this category: repairing broken tracks on tracked vehicles such as Paladins. For fire support specialists, these tasks were: 1) preparing M1200 AKV for operation, 2) while seated, removing and lifting/lowering the M242 Feeder Assembly from the 25mm Gun on a BFV during maintenance and/or remedial action misfire procedures, and 3) with assistance from another Soldier, pulling a casualty from a commander's seat and through the top hatch of a wheeled vehicle (e.g., a BFV or Stryker). The data also highlighted one task for each of the two 13 Series MOS's that respondents

reported was less important but more frequently done. For cannon crewmembers, this task was using a shovel or entrenching tool to fill sand bags when preparing a fighting position. For fire support specialists, this task was lifting and dragging a casualty to safety as quickly as possible.

Comparing Task Performance in Garrison and Combat Settings

It appears from the data that only cannon crewmembers spent similar amounts of time performing job-specific tasks in garrision and training settings and during combat deployments. Among the fire support specialists, 84% said they spent more time performing MOS-specific tasks during their last combat deployment than in garrision and training settings, and 10% said they spent at least three times as much time performing MOS-specific tasks during their last combat deployment. In contrast, only 6% of the fire support specialists said they spent more time performing job-specific tasks in garrision and training settings, and *none* of them reported spending at least three times as much time performing job-specific tasks in these types of settings. Both groups reported that they spent about twice as much time conducting tactical marches and patrols during combat deployments (well over twice as much time in the case of cannon crewmembers). Perhaps also notably, cannon crewmembers said they spent an average of 47% more time performing physically demanding combat arms task during their last combat deployment than in garrision and training settings.

Performance Expectations and Task Performance

Expectations of task completion were found to be strongly associated with how often Soldiers performed the tasks represented in this study. Many of the tasks on the three JAQs were reported to have been performed more often by Soldiers when they knew they were expected to perform the task when the situation arises. Results indicated that for each task, there was a small to significant percentage of Soldiers who did not believe they were expected to perform the task when needed. Perhaps for some of these Soldiers, there are good reasons to believe that one or more of the tasks represented by the survey(s) they completed for this study are not part of their jobs. However, the belief these Soldiers have that they are

not expected to complete certain specific tasks when the situation arises may reflect on the training they receive.

The Number of Tasks Performed

Substantial percentages of both cannon crewmembers and fire support specialists reported not performing many of the common and job-related tasks represented by the JAQs administered in this study. These results may be largely accounted for by one or more of a number of factors. First, a substantial majority of the survey participants had obtained the rank of E5 or higher and thus may have delegated many of these tasks. Second, the base or bases to which these subjects were assigned in the last two years may not have had some or all of the equipment needed to perform many of the tasks. And third, several of the companies and battalions to which these Soldiers belong may have emphasized training on some of these tasks to the relative exclusion of others. Nonetheless, it is notable that a sizable percentage of the Soldiers completing each of the three JAQ's administered in this study indicated that they had not performed many of the tasks represented by the questionnaires over the two-year period prior to survey administration. However, it is important to point out that the results provided reflect those persons who completed the surveys. It is possible that those persons participating were not representative of the broader groups of cannon crewmembers and fire support specialists.

Tasks Performed in Combat Settings but Not in Garrison

Three percent of cannon crewmembers and fire support specialists who had been deployed said they had performed MOS-specific tasks in the field but not in garrison, while another 5% indicated they may have done the same. Thus, it appears that many of these Soldiers completed at least some MOS-specific tasks during deployments but were not being trained in garrison to perform these tasks. This may be cause for concern. Of this eight percent, many (or over 20% of this small sample) reported spending the considerable majority of their time during their last combat deployment performing MOS-specific tasks they had not performed in garrison. Perhaps these respondents were trained during their respective

deployment settings. However, this may not be a satisfactory time for training. It appears that a closer look should be taken at the training being provided to each individual Soldier.

Comparing Task Importance Ratings of Soldiers to Those of SMEs

A comparison of the task importance ratings of the JAQ respondents with the judgments of 20 SMEs revealed considerable differences between the two sets of evaluations, albeit with some notable similarities. The job incumbents and SMEs agreed on the high importance of some of the tasks (e.g., among the cannon crewmembers and SMEs, setting up a GLPS and loading ammunition cans onto a BFV; among the fire support specialists and SMEs, establishing an observation point and performing a dismounted tactical movement), and came fairly close to agreement on others (e.g., among the cannon crewmembers and SMEs, transferring ammunition with an M992 FAASV Carrier; among the fire support specialists and SMEs, removing a feeder assembly from a BFV). However, the SMEs viewed several tasks as critical that the engineers rated as far less important (e.g., evacuating a casualty from the top of a BFV, removing a feeder assembly from a BFV, filling and carrying sandbags, throwing hand grenades, and dragging a casualty to a safe location). Also notably, one particular task (i.e., repairing broken tracks on a tracked vehicle such as a Paladin) was rated as highly important by the cannon crewmembers but not selected as critical by the SMEs.

What are some implications of these comparisons? First, it appears that some tasks that were once important to the job of a cannon crewmember or fire support specialist (e.g., removing a feeder assembly from a BFV, filling and carrying sandbags, using grenades, and in the case of the fire support specialists, performing dismounted tactical movements) may still be thought of as critical to job success by SMEs but not by job incumbents. Thus, differences of perspective concerning the relative importance of tasks performed by 13Bs and 13Fs may lead to differences in the manner that experts think these jobs should be performed and the way they are actually prepared for and performed by incumbents. For example, perhaps various types of tools or equipment (e.g., the Lightweight Laser Designator Rangefinder (LLDR) or various types of IZLID infrared lasers, both mentioned by Soldiers in their comments) would be set

aside and other equipment used. This may happen because some of this equipment may not be used in current combat scenarios, because Soldiers do not believe it's the best equipment available for the task, or because they are unaware that such equipment exists. Some of these possibilities may reflect a lack of knowledge and experience on the part of incumbent Soldiers that SMEs often possess, and these possibilities can be addressed in training settings and scenarios. As another example, it would be entirely possible to select a set of physically demanding tasks that are approved by experts for assessing Soldiers for the 13B or 13F positions that would not be widely or consistently used by job incumbents or others for screening purposes.

Tasks Not Addressed by JAQ's but Mentioned by Soldiers

Part of the purpose of this research investigation was to ascertain whether there were any physically demanding tasks performed by cannon crewmembers or fire support specialists that were not identified or addressed on the JAQ or in the larger study conducted with TRADOC. Based on responses to open-ended questions asking participants to identify physically demanding tasks they perform that were not addressed by the survey, there are a number of such tasks. Among the sample of cannon crewmembers, frequently mentioned tasks not addressed by the JAQ included transporting various types of howitzers, associated components, and ammunition, mounting/dismounting and emplacing/displacing howitzers and associated components, loading/ramming and firing rounds in howitzers to perform special missions, and operating the hydraulic hand pump and hand wheel to reposition the howitzer and/or hand tube. Among the fire support specialists, frequently mentioned tasks not represented by the survey included carrying additional gear such as a forward observer, a radio telephone operator, and additional fire support team equipment, and performing rough ruck marches in full kit. Tables 44 and 45 above reference several other tasks mentioned by the cannon crewmembers and fire support specialists that were not addressed by the JAQ.

Questionnaires and surveys are by their very nature slow and time-consuming methods of information collection. The entire process of survey research design, survey preparation, distribution,

completion, data analysis, report preparation, and distribution of findings may span months or even years. Job analysis using such methods can obtain accurate and helpful information, but the time involved in the survey process allows the jobs being analyzed to change to a possibly considerable extent. It is quite possible that the 13 Series MOS's being addressed in this report may have changed to some degree during the survey process, and may now contain a number of aspects not originally identified in this study. These aspects may need to be considered and addressed during the process of developing proxy measures for selection, as well as during the process of upgrading the appropriate training programs.

Strengths and Limitations of this Research

The three survey studies discussed in this report were designed with the following strengths.

1) The surveys used in this research were designed using best practices for survey development, including the writing and scaling of items based on the combined experience of 20 SMEs and observations of job performance conducted by several research scientists. Many item response sets were quantified as appropriate, and supplemental items were used to gather qualitative information concerning many of the tasks.
2) The entire population of Army cannon crewmembers and fire support specialists was provided the opportunity to respond to the surveys, rather than only a sample of these Soldiers.
3) Survey content was distributed over three surveys, to increase the number of fully completed surveys and the focused attention of Soldiers while completing them.
4) Surveys were administered by computer to maximize sample size, ease of use, and ease of data compilation and transfer.

This research is also limited in the following ways:

1) The response rates in this research were low (i.e., 2.6% and 2.5% respectively for the Common Task and 13B-Specific JAQs; the response rate for the 13F-Specific JAQ could not be determined). Thus, there may be a moderate to high likelihood that some results do not well

represent the cannon crewmember and fire support specialist populations as a whole. Further, those conducting this research had no way to compare respondents to non-respondents.

2) Despite the customization of many items to the cannon crewmember and fire support specialist MOS's, a large percentage of the JAQ items were of necessity written generically to ensure comparability of responses from Soldiers in many Army MOS's. This may have affected the quality of some item responses.
3) This survey was web-administered, and thus participants had limited opportunity to seek feedback about question intent. This may have affected the appropriateness of some item responses. For example, participants may have overlooked the units of distance being asked and thus responded in feet or yards when the unit being requested was miles. Task importance ratings were made on the following unanchored scale: "Very little importance" to the performance of my MOS, "Some importance," "Important," "Very important," and "Extremely important." Thus, these response options may represent different meanings or levels of importance to different subjects.

Recommendations

The question can now fairly be asked based on these highlighted results: Is the Army adequately preparing cannon crewmembers and fire support specialists for their jobs? If not, then 13 Series training programs may need to be comprehensively assessed and to some extent modified . Results indicated that cannon crewmembers spent nearly 81% of their deployment time performing physically demanding work (i.e., physical training, tactical movements & patrols, loading and unloading supplies and equipment, physically demanding tasks common to many combat arms jobs, and MOS-specific tasks such as loading missiles into weapon systems) as opposed to less than 69% of their time performing such work in garrison or training settings. The corresponding figures among fire support specialists are about 76% of deployment time and about 65% of their time in garrison and training settings, respectively. Perhaps more importantly, among cannon crewmembers about 145% more time was reported to have been spent conducting tactical movements, foot marches and patrols during combat deployments than in garrison or

training settings (i.e., nearly 19% and slightly under 8% respectively). Fire support specialists said they spent about 97% more time conducting foot movements and patrols during combat deployments (i.e.. slightly over 20% and slightly over 10% respectively). It is understandable that dismounted tactical movements would be conducted less in garrison and training settings than during combat deployments, given the demands of the task and high risk of injury. However, these reported differences are substantial and probably larger than ideal. Overall, it appears that the training engaged in by cannon crewmembers and fire support specialists may not be optimally preparing them for the physical demands of combat deployments. It also appears that expectations of performance are not being passed on to each and every Soldier.

A maxim and doctrinal summary statement often put forward in Army training settings is that the Army should "train as it fights." The results from these three JAQ studies completed by a total of over 900 Soldiers in the cannon crewmember and fire support specialist MOS's (the total number depending on the number of cannon crewmembers who completed both the common and 13B-specific surveys) suggest that perhaps cannon crewmembers and fire support specialists do ***not*** always train as they fight. Based on the results, three major recommendations are suggested:

1) Regular standardized assessments of cannon crewmember and fire support specialist training programs could be conducted to determine what common and 13 Series-specific tasks and capabilities will be emphasized or downplayed to reflect actual performance in combat settings. As force size changes and enemies are encountered in different theaters of operation, changes in training programs may be needed. The extent to which various tasks are performed in theater often changes, and new tasks and demands are occasionally encountered . Thus the degree to which tasks are emphasized in training programs may also need to change.
2) More training time may be needed to perform certain tasks in garrison settings. For example, based on this survey data, tactical marches and patrols are being performed by 13 Series Soldiers more than twice as often in theater than they are in garrison and training settings (about twice as often in the case of 13F's). As another example, a large majority of the respondents (i.e., over

80%) said that they had never removed and lifted/lowered the M242 Feeder Assembly from the 25mm gun on a BFV during maintenance or remedial action misfire procedures. On a more general level, many of the respondents said that in the last two years they had not performed one or more of the tasks represented in this study.

3) A dedicated follow-up effort is recommended to ascertain that Soldiers are trained on each of the tasks represented in this study, perhaps along with tasks not addressed by the JAQ but mentioned by Soldiers in their comments. Considering each of the tasks evaluated by SMEs as critical to job success, the percentages of JAQ respondents who reported that they had not performed the task ranged from 4% (not establishing an observation point) to 84% (not removing the feeder assembly from a BFV).

APPENDIX A

Common Task Ratings of the Individual 13B and 13F Samples

Ratings of Frequencies with which 13 Series Common Tasks are Performed (%)							
Task	**MOS**	**Never**	**Only In IET**	**< 3 Times**	**4-9 Times**	**10-19 Times**	**20+ Times**
1. Lift & Drag Casualty to Safe Position as Quickly as Possible	13B (n=301)	9.6	9.0	36.2	25.2	10.3	9.6
	13F (n=280)	5.4	11.4	40.7	25.0	8.2	9.3
2. With Assistance Lift, Carry & Install Barrel of 25mm gun on BFV	13B (n=299)	94.3	1.0	2.0	2.3	0.3	0
	13F (n=280)	62.9	7.5	8.6	5.4	6.8	8.9
3. Lift & Carry Ammo Cans from Supply Point to BFV	13B (n=297)	55.2	0.7	9.4	5.1	7.1	22.6
	13F (n=280)	54.3	7.5	16.1	10.0	4.6	7.5
4. Throw a Hand Grenade	13B (n=301)	8.0	49.8	30.6	7.6	2.0	2.0
	13F (n=280)	5.0	43.2	36.4	9.6	5.0	0.7
5. Use Shovel to Fill Sand Bags for Building Fighting Position	13B (n=299)	9.6	11.0	30.8	15.1	12.4	21.1
	13F (n=280)	11.8	19.3	37.5	17.1	7.1	7.1
6. Lift & Carry Sandbags & Build Fighting Position	13B (n=300)	12.0	10.3	33.0	13.0	10.3	21.3
	13F (n=280)	14.3	16.1	39.6	17.5	5.7	6.8
7. With Assistance Pull Casualty Through Top Hatch of Vehicle	13B (n=297)	62.3	9.1	21.2	5.4	1.3	0.7
	13F (n=280)	57.1	5.0	27.1	7.1	2.5	1.1
8. Climb Over, Through, or Around Barbed Wire Obstacles	13B (n=298)	25.2	33.9	27.2	9.7	1.7	2.3
	13F (n=208)	16.8	25.0	33.7	14.4	8.2	1.9
9. With Group, Lift, Carry & Connect Vehicle Tow Bar to Disabled Vehicle	13B (n=299)	32.4	4.3	33.4	15.1	8.0	6.7
	13F (n=278)	34.9	3.6	38.1	15.8	4.7	2.9
10. Jack Up Vehicle & Remove Lug Nuts from Flat Tire	13B (n=301)	36.9	5.6	38.2	13.0	4.0	2.3
	13F (n=278)	42.8	3.2	37.1	13.3	2.9	0.7

Ratings of Frequencies with which 13 Series Common Tasks are Performed (%) (Continued)							
Task	**MOS**	**Never**	**Only In IET**	**< 3 Times**	**4-9 Times**	**10-19 Times**	**20+ Times**
11. With Assistance, Remove HMMWV Spare Tire, Roll, & Lift onto Axle of Disabled Vehicle	13B (n=300)	43.7	3.7	43.3	6.0	2.0	1.3
	13F (n=279)	48.7	3.2	37.6	8.6	1.1	0.7
12. Manually Tighten Lug Nuts on Tire with Lug or Torque Wrench	13B (n=298)	36.9	3.0	44.3	8.4	4.0	3.4
	13F (n=280)	42.9	2.1	39.3	11.1	3.2	1.4
13. As Part of Group of 4, Remove HMMWV Flat Tire & Lift into Back of Vehicle	13B (n=300)	49.0	4.3	36.3	7.0	1.3	2.0
	13F (n=279)	49.8	4.3	38.7	5.4	1.1	0.7
14. Perform Dismounted Foot March or Tactical Movement	13B (n=300)	4.7	1.7	20.3	16.3	15.0	42.0
	13F (n=280)	2.1	2.1	10.7	13.9	11.8	59.3
15. While Seated, Remove & Lift/Lower M242 Feeder Assembly on BFV 25mm Gun	13B (n=300)	92.0	1.0	3.7	0.7	1.3	1.3
	13F (n=279)	68.0	5.8	10.1	5.0	3.2	7.9

Others' Expectations Concerning Performance of 13 Series Common Tasks (%)			
Task	**MOS**	**No**	**Yes**
1. Lift & Drag Casualty to Safe Position as Quickly as Possible	13B (n=297)	9.8	90.2
	13F (n=281)	7.8	92.2
2. With Assistance Lift, Carry & Install Barrel of 25mm gun on BFV	13B (n=299)	93.3	6.7
	13F (n=280)	47.1	52.9
3. Lift & Carry Ammo Cans from Supply Point to BFV	13B (n=299)	55.5	44.5
	13F (n=277)	45.1	54.9
4. Throw a Hand Grenade	13B (n=297)	37.4	62.6
	13F (n=280)	23.6	76.4
5. Use Shovel to Fill Sand Bags for Building Fighting Position	13B (n=301)	16.3	83.7
	13F (n=281)	22.8	77.2
6. Lift & Carry Sandbags & Build Fighting Position	13B (n=301)	23.3	76.7
	13F (n=280)	28.6	71.4
7. With Assistance Pull Casualty Through Top Hatch of Vehicle	13B (n=301)	54.2	45.8
	13F (n=280)	25.7	74.3
8. Climb Over, Through, or Around Barbed Wire Obstacles	13B (n=299)	58.9	41.1
	13F (n=207)	19.8	80.2
9. With Group, Lift, Carry & Connect Vehicle Tow Bar to Disabled Vehicle	13B (n=301)	38.5	61.5
	13F (n=278)	35.6	64.4
10. Jack Up Vehicle & Remove Lug Nuts from Flat Tire	13B (n=301)	36.5	63.5
	13F (n=278)	42.4	57.6
11. With Assistance, Remove HMMWV Spare Tire, Roll, & Lift onto Axle of Disabled Vehicle	13B (n=301)	38.9	61.1
	13F (n=280)	46.1	53.9
12. Manually Tighten Lug Nuts on Tire with Lug or Torque Wrench	13B (n=300)	38.0	62.0
	13F (n=279)	45.5	54.5

Others' Expectations Concerning Performance of 13 Series Common Tasks (%) (Continued)			
Task	**MOS**	**No**	**Yes**
13. As Part of Group of 4, Remove HMMWV Flat Tire & Lift into Back of Vehicle	13B (n=298)	46.6	53.4
	13F (n=279)	50.2	49.8
14. Perform Dismounted Foot March or Tactical Movement	13B (n=299)	112.7	87.3
	13F (n=281)	1.4	98.6
15. While Seated, Remove & Lift/Lower M242 Feeder Assembly on BFV 25mm Gun	13B (n=296)	90.5	9.5
	13F (n=280)	50.4	49.6

Importance Ratings of 13 Series Common Tasks (%)						
Task	**MOS**	**Very Little**	**Some**	**Important**	**Very**	**Extremely**
1. **Lift & Drag Casualty to Safe Position as Quickly as Possible**	13B (n=272)	13.2	14.3	25.4	17.3	29.8
	13F (n=259)	10.0	27.0	26.3	16.2	20.5
2. With Assistance Lift, Carry & Install Barrel of 25mm gun on BFV	13B (n=24)	16.7	8.3	25.0	29.2	20.8
	13F (n=152)	5.3	13.2	34.9	18.4	28.3
3. Lift & Carry Ammo Cans from Supply Point to BFV	13B (n=136)	6.6	5.9	12.5	23.5	51.5
	13F (n=154)	5.8	18.8	31.8	21.4	22.1
4. Throw a Hand Grenade	13B (n=191)	17.3	28.8	31.4	13.1	9.4
	13F (n=215)	9.8	25.6	33.5	18.1	13.0
5. Use Shovel to Fill Sand Bags for Building Fighting Position	13B (n=252)	8.7	13.5	21.8	26.2	29.8
	13F (n=216)	6.9	21.3	29.6	20.8	21.3
6. Lift & Carry Sandbags & Build Fighting Position	13B (n=230)	7.0	12.6	23.0	28.3	29.1
	13F (n=198)	4.0	24.7	32.8	23.7	14.6
7. With Assistance Pull Casualty Through Top Hatch of Vehicle	13B (n=137)	8.8	13.9	28.5	19.7	29.2
	13F (n=207)	4.8	15.9	28.0	26.6	24.6
8. Climb Over, Through, or Around Barbed Wire Obstacles	13B (n=125)	7.2	24.8	36.0	19.2	12.8
	13F (n=164)	7.9	25.0	32.9	18.9	15.2
9. With Group, Lift, Carry & Connect Vehicle Tow Bar to Disabled Vehicle	13B (n=183)	3.3	13.7	27.3	29.0	26.8
	13F (n=178)	6.2	21.9	27.5	21.3	23.0
10. Jack Up Vehicle & Remove Lug Nuts from Flat Tire	13B (n=191)	4.7	17.3	30.9	26.2	20.9
	13F (n=162)	9.3	27.8	29.0	21.6	12.3
11. With Assistance, Remove HMMWV Spare Tire, Roll, & Lift onto Axle of Disabled Vehicle	13B (n=182)	3.8	15.9	39.0	23.1	18.1
	13F (n=151)	7.9	33.8	31.1	15.2	11.9

Importance Ratings of 13 Series Common Tasks (%) (Continued)						
Task	**MOS**	**Very Little**	**Some**	**Important**	**Very**	**Extremely**
12. Manually Tighten Lug Nuts on Tire with Lug or Torque Wrench	13B (n=187)	4.8	12.8	38.5	23.0	20.9
	13F (n=152)	10.3	32.4	38.2	11.8	7.4
13. As Part of Group of 4, Remove HMMWV Flat Tire & Lift into Back of Vehicle	13B (n=162)	5.6	21.0	37.7	17.9	17.9
	13F (n=136)	0.4	1.4	6.2	24.6	67.4
14. Perform Dismounted Foot March or Tactical Movement	13B (n=261)	6.1	8.8	26.8	22.2	36.0
	13F (n=276)	8.6	33.6	33.6	14.5	9.9
15. While Seated, Remove & Lift/Lower M242 Feeder Assembly on BFV 25mm Gun	13B (n=34)	17.6	5.9	23.5	38.2	14.7
	13F (n=138)	2.2	12.3	34.1	23.2	28.3

Ratings of Time Requirements (in Minutes) for 13 Series Common Tasks (%)							
Task	**MOS**	**<1 Mins**	**1-5 Mins**	**6-10 Mins**	**11-30 Mins**	**31-60 Mins**	**>60 Mins**
1. **Lift & Drag Casualty to Safe Position as Quickly as Possible**	13B (n=272)	30.9	56.3	9.2	2.9	0.7	0.0
	13F (n=258)	35.3	53.9	8.1	2.3	0.4	0.0
2. With Assistance Lift, Carry & Install Barrel of 25mm gun on BFV	13B (n=21)	28.6	52.4	14.3	0.0	4.8	0.0
	13F (n=146)	12.3	47.3	26.7	11.0	2.1	0.7
3. Lift & Carry Ammo Cans from Supply Point to BFV	13B (n=134)	14.2	38.8	16.4	14.9	7.5	8.2
	13F (n=152)	12.5	50.7	24.3	10.5	1.3	0.7
4. Throw a Hand Grenade	13B (n=189)	87.3	7.4	2.6	1.6	1.1	0.0
	13F (n=213)	93.0	5.2	0.5	0.5	0.5	0.5
5. Use Shovel to Fill Sand Bags for Building Fighting Position	13B (n=252)	7.5	17.5	8.3	15.9	27.0	23.8
	13F (n=216)	5.1	12.5	11.6	27.8	28.7	14.4
6. Lift & Carry Sandbags & Build Fighting Position	13B (n=230)	6.1	18.3	12.6	17.8	21.7	23.5
	13F (n=199)	3.5	14.6	15.6	35.2	17.1	14.1
7. With Assistance Pull Casualty Through Top Hatch of Vehicle	13B (n=137)	12.4	60.6	20.4	4.4	2.2	0.0
	13F (n=206)	18.9	58.3	16.5	4.9	1.0	0.5
8. Climb Over, Through, or Around Barbed Wire Obstacles	13B (n=125)	12.8	56.0	21.6	7.2	0.8	1.6
	13F (n=165)	15.8	60.6	13.9	7.3	1.8	0.6
9. With Group, Lift, Carry & Connect Vehicle Tow Bar to Disabled Vehicle	13B (n=185)	4.3	42.2	31.4	16.8	3.8	1.6
	13F (n=178)	1.1	38.8	37.6	17.4	4.5	0.6
10. Jack Up Vehicle & Remove Lug Nuts from Flat Tire	13B (n=192)	3.1	15.1	31.3	39.1	8.3	3.1
	13F (n=163)	0.6	16.0	36.2	33.7	12.3	1.2
11. With Assistance, Remove HMMWV Spare Tire, Roll, & Lift onto Axle of Disabled Vehicle	13B (n=183)	2.7	19.1	35.5	30.1	9.3	3.3
	13F (n=151)	0.7	27.8	37.7	24.5	7.9	1.3

Ratings of Time Requirements (in Minutes) for 13 Series Common Tasks (%) (Continued)							
Task	**MOS**	**<1 Mins**	**1-5 Mins**	**6-10 Mins**	**11-30 Mins**	**31-60 Mins**	**>60 Mins**
12. Manually Tighten Lug Nuts on Tire with Lug or Torque Wrench	13B (n=187)	4.8	38.5	30.5	19.8	4.8	1.6
	13F (n=150)	2.0	41.3	39.3	13.3	4.0	0.0
13. As Part of Group of 4, Remove HMMWV Flat Tire & Lift into Back of Vehicle	13B (n=162)	7.4	38.3	30.2	18.5	3.7	1.9
	13F (n=137)	5.8	43.1	28.5	16.8	5.1	0.7
14. Perform Dismounted Foot March or Tactical Movement	13B (n=260)	0.4	0.0	1.2	5.4	21.5	71.5
	13F (n=276)	0.4	1.4	0.4	1.8	12.3	83.7
15. While Seated, Remove & Lift/Lower M242 Feeder Assembly on BFV 25mm Gun	13B (n=32)	3.1	43.8	28.1	15.6	3.1	6.3
	13F (n=136)	10.3	37.5	39.7	11.0	1.5	0.0

Uniform Worn While Performing 13 Series Common Tasks (%)							
Task	**MOS**	**Standard**	**Standard + Vest**	**Fight Load -Weapon**	**Fight Load + Weapon**	**Approach**	**EMR Approach**
1. **Lift & Drag Casualty to Safe Position as Quickly as Possible**	13B (n=272)	18.0	5.1	16.2	54.0	3.7	2.9
	13F (n=257)	14.8	6.6	8.9	51.8	9.7	8.2
2. With Assistance Lift, Carry & Install Barrel of 25mm gun on BFV	13B (n=21)	14.3	9.5	28.6	28.6	14.3	4.8
	13F (n=147)	29.9	40.8	15.0	10.9	1.4	2.0
3. Lift & Carry Ammo Cans from Supply Point to BFV	13B (n=134)	17.2	11.2	29.9	39.6	1.5	0.7
	13F (n=153)	19.0	31.4	18.3	27.5	1.3	2.6
4. Throw a Hand Grenade	13B (n=189)	4.2	5.3	22.2	63.5	3.7	1.1
	13F (n=212)	3.3	3.8	14.2	63.2	8.0	7.5
5. Use Shovel to Fill Sand Bags for Building Fighting Position	13B (n=252)	21.8	12.7	30.6	33.7	0.8	0.4
	13F (n=216)	21.3	5.6	31.0	39.4	2.3	0.5
6. Lift & Carry Sandbags & Build Fighting Position	13B (n=229)	19.2	8.7	30.6	40.6	0.4	0.4
	13F (n=200)	20.5	4.5	26.0	44.5	2.5	2.0
7. With Assistance Pull Casualty Through Top Hatch of Vehicle	13B (n=137)	5.1	8.8	28.5	56.2	0.7	0.7
	13F (n=205)	5.4	19.0	23.9	48.8	1.5	1.5
8. Climb Over, Through, or Around Barbed Wire Obstacles	13B (n=125)	14.4	7.2	7.2	66.4	3.2	1.6
	13F (n=166)	10.2	4.8	7.8	65.7	7.2	4.2
9. With Group, Lift, Carry & Connect Vehicle Tow Bar to Disabled Vehicle	13B (n=185)	9.2	10.8	24.3	54.1	1.1	0.5
	13F (n=179)	8.4	15.1	25.1	48.6	1.7	1.1
10. Jack Up Vehicle & Remove Lug Nuts from Flat Tire	13B (n=190)	30.5	12.6	25.8	30.0	0.5	0.5
	13F (n=160)	36.3	15.6	23.8	22.5	1.3	0.6

Uniform Worn While Performing 13 Series Common Tasks (%) (Continued)							
Task	**MOS**	**Standard**	**Standard + Vest**	**Fight Load - Weapon**	**Fight Load + Weapon**	**Approach**	**EMR Approach**
11. With Assistance, Remove HMMWV Spare Tire, Roll, & Lift onto Axle of Disabled Vehicle	13B (n=184)	25.5	12.0	29.3	31.5	1.1	0.5
	13F (n=149)	36.9	11.4	26.8	23.5	0.7	0.7
12. Manually Tighten Lug Nuts on Tire with Lug or Torque Wrench	13B (n=187)	34.2	9.6	25.1	29.9	0.5	0.5
	13F (n=149)	37.6	15.4	22.1	23.5	1.3	0.0
13. As Part of Group of 4, Remove HMMWV Flat Tire & Lift into Back of Vehicle	13B (n=162)	27.8	12.3	24.7	33.3	1.2	0.6
	13F (n=136)	37.5	12.5	22.1	26.5	0.7	0.7
14. Perform Dismounted Foot March or Tactical Movement	13B (n=262)	4.2	3.1	9.5	40.1	26.0	17.2
	13F (n=276)	1.8	1.1	4.3	30.4	26.1	36.2
15. While Seated, Remove & Lift/Lower M242 Feeder Assembly on BFV 25mm Gun	13B (n=31)	12.9	3.2	35.5	41.9	3.2	3.2
	13F (n=136)	14.7	54.4	16.9	11.8	0.7	1.5